

## Program Listed for First Porcelain Enamel Conference at Illinois U. May 5-7

URBANA, Ill.—The first annual Porcelain Enamel Institute Forum will be held at the University of Illinois here May 5, 6, and 7.

Open to everyone in the porcelain enameling and related industries, the forum supplants the "short courses" and "courses of study" previously held for enamellers, according to F. E. Hodek, Jr., chairman of the committee in charge of the event.

Technical program of the meeting includes papers on "Enamel Shop Housekeeping," by W. H. Pfeiffer, Frigidaire Corp., "Production of One Coat Cover Ware," by Herman Cook, Norge Corp., "Enamel Shop Production Problems," by Jay Simons, Westinghouse Electric & Mfg. Co., and "Porcelain Enamel Unit Construction as it Pertains to Electric Refrigerators," by F. L. Michael, General Electric Co.

Other topics scheduled for discussion are "Some Fundamentals of Porcelain Enamel," by Prof. C. W. Parmelee, University of Illinois, "Factors Which Affect the Efficiency of the Spraying Operation," by W. G. Martin, A. O. Smith Corp., "Requirements of Porcelain Enamel for Architectural Work," by Milton Gallup, Enamel Products Co., and "Black Edging Practice," by J. E. Rosenberg, O. Hommel Co., Inc.

Emphasis will be placed upon practical problems, Institute officials state. Assisting Mr. Hodek in preparation of the forum program are Dr. A. I. Andrews, University of Illinois; Prof. R. M. King, Ohio State University, and J. E. Hansen of Ferro Enamel Corp.

Complete program of the meeting follows:

### Wednesday, May 5

10 a.m.—Registration.  
2:30 p.m.—Address of Welcome, by a representative of the University of Illinois. Response, R. G. Calton, president of the Porcelain Enamel Institute.

"Review of Progress in the Industry," Emerson P. Poste, consulting engineer.

"Some Fundamentals of Porcelain Enamel," Prof. C. W. Parmelee, University of Illinois.

### Thursday, May 6

9:30 a.m.—General Session.  
"Symposium on Testing of Enamels," W. N. Harrison, United States Bureau of Standards.

"Design and Factors Affecting Enameling," E. C. Greenstreet, Standard Gas Equipment Co.

"Reducing Enamel Ware Shipping Losses," Howard A. Wetter, Chicago & Northwestern Railroad.

"The Institute and the Enameler," E. L. Lasier, Titanium Alloy Mfg. Co.

"Milling Practice," E. C. Aydelotte, Benjamin Electric Mfg. Co.  
"Enamel Shop Housekeeping," W. H. Pfeiffer, Frigidaire Corp.

"Factors Which Affect the Efficiency of the Spraying Operation," Wesley G. Martin, A. O. Smith Corp.

### Friday, May 7

9:30—"Furnaces," F. S. Markert, Ferro Enamel Corp.

"Production of One Coat Cover Ware," Herman Cook, Norge Corp.

"Enamel Shop Production Problems," Jay Simons, Westinghouse Electric & Mfg. Co.

"Forum Plans for 1938," F. E. Hodek, Jr., General Porcelain Enameling & Mfg. Co.

1:30 p.m.—Group Sessions.

Hollow-Ware: H. C. Arnold, Federal Enameling & Stamping Co., chairman.

Pickle Room Practice, B. T. Sweely, Chicago Vitreous Enamel Product Co.

"Mottling Gray Ware Enamel," E. C. Dexheimer, National Enameling & Stamping Co.

"Hollow-ware Tests," (Impact, Quenching and Thermal on the finished piece), G. H. McIntyre, Ferro Enamel Corp.

Cast Iron: H. D. Wolfram, Porcelain Enamel & Mfg. Co., chairman.

"Foundry Practice," M. E. Manson, Chicago Vitreous Enamel Product Co.

"Preparation of Castings for Enameling," M. L. Carl, Sloss-Sheffield Steel & Iron Co.

"Processing of Leadless Cast Iron Enamels," E. C. Porst, George D. Roper Corp.

Sheet Iron: C. P. Scripture, Ingram-Richardson Mfg. Co. of Indiana, chairman.

"Screen Process and Decoration," E. R. Brauner, Federal Electric Co.

"Requirements of Porcelain Enamel for Architectural Work," Milton Gallup, Enamel Products Co.

"Porcelain Enamel Unit Construction as it Pertains to Refrigerators," F. L. Michael, General Electric Co.

"Black Edging Practice," J. E. Rosenberg, O. Hommel Co., Inc.

## Wasson Opens New Household Appliance Department

INDIANAPOLIS—H. P. Wasson & Co., department store, has opened a new household appliance department to handle Leonard, Norge, and Frigidaire refrigerators; Norge and Easy washers and ironers; Norge gas and electric and Sherman gas ranges; and RCA-Victor and Philco radios.

Doyle Wyre, for the past three years with Jones Store, Kansas City, has been made manager of the new department.

## Washington Household Sales Up 11.3% During 1936

(Concluded from Page 1, Column 1)

1935. Retail value of range sales last year was \$350,610, the report showed. Number of ranges on Potomac Electric Power Co. lines at the start of this year was 9,000.

Refrigerator sales showed an increase in units of 11.3%, totaling 20,495 against 18,329 units reported sold during 1935. Retail value of refrigerator sales was \$3,361,180, the report revealed.

Ironer sales rose 32% during the year, totaling 2,339 with a retail value of \$133,323, compared with 1,780 units during 1935. The report estimates that there are now 10,331 ironers on the Pepco lines.

Sales of all major appliances to the 152,000 customers in the Washington, D. C., area during the year were valued at \$9,224,521, an increase of 15% over the 1935 sales made to 148,000 wired homes.

Sales of washers during 1936 increased only 5%, with 10,071 units, valued at \$664,686, as compared to 9,580 units sold during the previous year.

Oil burner activity increased 20% during the year, sales being reported at 5,986 units, with a retail value of \$2,023,268, against 4,987 units during 1935.

Sales of vacuum cleaners were up 7% during 1936, with 8,254 units, valued at \$453,970, reported as compared with 7,705 units during 1935.

Midget radio set sales totaled 9,000, to increase 30% over 1935 marks, but console radio sales fell 1.2% below their 1935 figure, 36,698 units being reported compared with 37,164 units during the previous year. Retail value of all radio sales was \$2,237,484.

Value of small appliance sales rose 10%, \$922,452 being reported as against \$835,121 value in 1935.

## 'New Art' Recipe Book Promotes G-E Ranges

NELA PARK, Cleveland—Appetizing recipes, menus, and helpful hints for the preparation and preservation of food, using the electric range and refrigerator, are included in the G-E "New Art" recipe book, just released by General Electric Kitchen Institute here.

Included in the beverage-to-dessert coverage of the menu situation are recipes for cheese and egg dishes, one-dish meals, wine cookery, canning and preserving, wild game cookery, sauces and gravies, and breads. It also contains a section devoted to selected menus for special occasions, a series of time and temperature charts, and notes on high altitude cookery.

In physical appearance and arrangement, the book is distinctive. It contains 10 full-page table settings, reproduced in natural color photography, which provide the housewife with models to follow for service arrangements, table settings, and ornamentation of foods.

It has a spiral binding and stiff paper covers, finished in an attractive blue.

## Picture Scrapbook of Sales Features Aids Dealer

BIRMINGHAM, Ala.—A picture scrapbook of sales features, use of factory promotion material, and plenty of night calls—John C. Gold of Birmingham Gas Co. credits these with enabling him to sell 105 Electrolux refrigerators last year.

The picture scrapbook, Mr. Gold says, gets across points to prospects without necessity of additional demonstration, and he considers night calls essential in obtaining a good volume of business.

A former insurance salesman, Mr. Gold sold 59 refrigerators in 1935, his first year. Last year he raised that mark by about 33%.

## Utility Uses Novel Electrolux Promotion Booklet

GENEVA, N. Y.—Something new in the way of a refrigerator sales promotion idea has been introduced by the local office of the Empire Gas & Electric Co., selling Electrolux gas refrigerators.

Each customer paying his monthly gas and electric bill is given a little folder, on which the cashier puts one penny of the change. Glancing at the folder, the customer sees this message:

"This penny will buy hours of refrigeration, if you spend it for gas." Inside the folder is the Electrolux sales story.

## N. Y. Dealers Obtain Price Contract on Maytag Washers

(Concluded from Page 1, Column 4)

lyn, Inc., last Wednesday. Dealers' and manufacturers' representatives discussed the price-fixing law at a series of meetings held last week.

Optimism over the prospects for price-fixing in the entire major appliances group was expressed by officials of the dealers' association. It is understood that definite headway toward the measure has been made among the refrigerator group. A second meeting with the Refrigerator Association of New York was scheduled for Monday.

The problem of free installation, which is not general in all parts of New York State, is said to be complicating moves toward accord with electric range dealers.

Several dealers handling an entire group of major appliances, such as refrigerators, ranges, washers, and ironers, have expressed willingness to sign price-fixing contracts covering their entire lines as soon as several legal technicalities involved

in the situation are cleared up.

It has been reported that manufacturers feel that 100% adoption of price-fixing under the Feld-Crawford Act by all firms manufacturing a single type of product must be obtained for effective management of the new trend toward established retail prices.

## 'Around the World'

(Concluded from Page 12, Column 5)

and cabinets. Mr. Saunders is the man to see.

Following are some of the principal agents and the lines they carry:

York-Shipley, Ltd., North Circular Road, Welsh Harp, London, N.W.2, J. B. Farish, managing director, sells York refrigerating and air-conditioning machines; A. J. Balcombe, Ltd., 52 Tabernacle St., London, E.C.2, handles Crosley; Sparton Refrigeration Co., 415 Oxford St., London, W.1, handles Sparton; Dulcetto-Polyphon, Ltd., 2 Newman St., London, W.1, with Mr. Gordon Willis in charge, handles Servel; Supercold Refrigerators, Gray's Inn Road, London, W.C.1, handles Supercold commercial equipment; Vac-Tric, Ltd., Waterloo Road, London, N.W.1, with Mr. Pegley in charge, handles Apex.

## BUYER'S GUIDE

SPECIAL RATES APPLY TO THESE COLUMNS ONLY  
WRITE ADVERTISING DEPT. FOR FULL INFORMATION



WRITE FOR OUR NEW  
1937 CATALOG

## UNIMPEDED MOTION!

INSURES RAPID HEAT TRANSFER

No sluggishness—the unimpeded motion of the refrigerant in coils built by MANUFACTURERS FIN COIL COMPANY equipped with THERMO FIN In Tube, keeps it swirling and "swishing" through all the tubes of your air conditioning or refrigerating coil.

THERMO FIN is equipped with individual beater blades to break up any oil film which would prevent refrigerant from coming in contact with the tube.

MANUFACTURERS FIN COIL CO.  
2505-7 SO. PULASKI ROAD CHICAGO, ILL.



## PURO ELECTRIC WATER COOLERS

Thoroughly reinforced all steel attractively finished cabinets.

Complete line of different Models and Capacities.

Write for details and sales prices.

Puro Filter Corporation of America

440 Lafayette Street, New York City

Spring 7-1800

## HIGHEST Filtrine EFFICIENCY

## WATER COOLERS

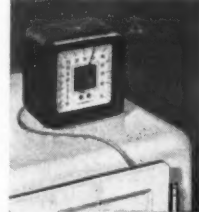
COMMERCIAL — AIR CONDITIONING

From 2 gals. per hour to 500 gals. per minute

WATER FILTERS — STEEL PIPE COILS — SURGE TANKS

FILTRINE MFG. CO., Brooklyn, N. Y.

## MARSH Refrigeration Instruments



THE Marsh "Service" Refrigeration Service Thermometer eliminates all the guess-work of a pocket thermometer in service work. It gives you an accurate, easily read, REMOTE reading in the proper way—with a closed door. There is plenty of tubing to reach point of testing, neatly compacted into the case. Guaranteed within one degree—has "Recalibrator" to KEEP it accurate. Use it for servicing all jobs, household and commercial, also in selling refrigerators. Sold in —10° to 65° or —10° to 100° ranges at remarkably low dealers net price of \$5.00. (Subject to change without notice.)

anteed within one degree—has "Recalibrator" to KEEP it accurate. Use it for servicing all jobs, household and commercial, also in selling refrigerators. Sold in —10° to 65° or —10° to 100° ranges at remarkably low dealers net price of \$5.00. (Subject to change without notice.)

JAS. P. MARSH CORPORATION  
2057 SOUTHPORT AVENUE, CHICAGO

WRITE FOR  
NEW CATALOG



Overload!  
REGULATORS

Class  
9100

RATINGS:  
1 H.P.,  
110-220 V. A.C.  
1/2 H.P.,  
115-230 V. D.C.

FEATURING—  
One compact unit . . . the overload block is fitted to the standard pressure or temperature regulator, low side or dual type . . . melting alloy type relay is trip free and indicating . . . reset button provides manual "on and off" . . . double voltage wiring terminals. Write for the catalog describing the complete line of 9100 refrigeration controls.

SQUARE D EVERYWHERE

SQUARE D COMPANY

REGULATOR DIVISION, DETROIT, MICHIGAN  
WESTERN DIVISION, LOS ANGELES, CALIFORNIA  
SQUARE D COMPANY, CANADA LTD., TORONTO, CANADA

# CONDENSERS • EVAPORATORS

FOR EVERY MODERN APPLICATION

Quality and efficiency are the outstanding features of Long condensers and evaporators. Condenser units of tube and flat continuous fin construction, in copper and steel, give maximum heat dissipation per pound of material used, and collect less dust. Available in both domestic and commercial units for electric refrigeration and air conditioning applications.

LONG MANUFACTURING DIVISION  
BORG-WARNER CORPORATION

DETROIT, MICHIGAN  
WINDSOR, CANADA

LONG



# REFRIGERATION NEWS

Trade Mark Registered U. S. Patent Office. Established 1926 as Electric Refrigeration News  
Member Audit Bureau of Circulations. Member Associated Business Papers.

VOL. 21, No. 1, SERIAL NO. 424  
ISSUED EVERY WEDNESDAY

Entered as second-class  
matter Aug. 1, 1927

DETROIT, MICHIGAN, MAY 5, 1937

Copyright, 1937, by  
Business News Pub. Co.

FOUR DOLLARS PER YEAR  
TWENTY CENTS PER COPY

## Copeland & Rex Resume Full Production as Strikes End

### Strikers Return to Jobs Pending Outcome of Negotiations

DETROIT—Withdrawal of picket lines and return of striking employees to work pending the outcome of company-union negotiations marked developments this week in a Copeland Refrigeration Corp. strike begun April 27 when a number of workers affiliated with Mechanics' Educational Society of America struck in protest to dismissal of one employee and voluntary resignation of another.

Officials of the company and representatives of the union are holding conferences relative to a nine-point list of labor relations questions, involving seniority, bargaining rights of workers regardless of union affiliations, Wagner Labor Act provisions, non-discrimination against union and non-union men, and withdrawal of the picket line.

Agreement on eight of the nine (Concluded on Page 2, Column 5)

## Chicago Dealer Group Calls for Franchises Under Fair Trade Act

CHICAGO—The Illinois Radio and Electrical Dealers' Association has urged Chicago distributors of electric refrigerators to franchise dealers under the Illinois Fair Trade Act as a guarantee of good faith in eliminating price cutting and other merchandising malpractices now current in this territory.

In a bulletin recently sent to major distributing outlets, the Association calls attention to the action taken by the Electrical Appliance Dealers Association of Brooklyn under the Feld-Crawford fair trade law, and the fact that it has been endorsed also by the Radio and Appliance Dealers' Association of Greater New York.

The Electric Association of Philadelphia (Concluded on Page 2, Column 5)

## Big Sales Gain in March Indicates Cincinnati Dealers Are Overcoming Effects of Flood Period

By James McCallum

Genuinely enthusiastic about Cincinnati's flood recovery, Eugene Zackman, secretary of Cincinnati Electrical Association, spoke with what we regarded as justifiable pride of the way in which the city had met the flood situation.

Refrigerator sales of the Cincinnati area for the first three months of this year, Mr. Zackman reported, are 8% behind those for the first quarter of last year, although March sales alone were 300 units over those of March, 1936. Mr. Zackman blamed flood conditions for the general sales decrease.

Questioned about dealer cooperation in regard to establishment of a code of standard trade-in allowances, Mr. Zackman replied that the present trade-in situation is pretty much a matter of individual discretion, or indiscretion, although a few dealers are still operating rather loosely under a code established about two years ago. This code prohibited acceptance of ice box trade-ins, and limited the maximum trade-in allowance on mechanical units to 20%.

### Wurlitzer Replaced Flood-Damaged Boxes

"We'll either cancel what you owe us, or replace your box with a brand new one."

This was the offer made by Wurlitzer Co., Cincinnati G-E and Crosley dealer, to instalment-plan refrig-

## Rex Recognizes UAWA as Bargaining Agent for Its Members Only

CONNEERSVILLE, Ind.—Fourteen hundred workers in the plant of Rex Mfg. Co., refrigerator cabinet and auto trailer manufacturer, returned to their work last Friday morning, following settlement of a labor controversy which resulted in a strike late Tuesday and disorders in which five men were injured.

The strike was called by United Automobile Workers of America, which alleged discrimination against its members and failure of the company to confer with the union's grievance committee.

Members of the Cabinet and Refrigerator Workers Protective Association, another union within the plant, refused to leave their jobs when the strike was called, and about 600 of them remained in the plant, armed with clubs and pieces of pipe.

U. A. W. pickets, similarly armed, patrolled outside the plant and prevented workers on the night shift from entering the buildings. It was in the resultant scuffles that four of the five men were injured. The fifth was injured when struck by a missile thrown through a factory window.

Several windows in the front of the office part of the factory were smashed during the disorder. Following reports of motorists that missiles had been thrown through the windows of their cars, Mayor Dentlinger ordered city police to the scene, and had streets in front of the plant closed for a distance of four blocks.

Officials of the company said that (Concluded on Page 2, Column 3)

## Air Conditioning Humors Cincinnati's Snakes

CINCINNATI — A \$135,000 reptile house air conditioned and humidified to suit some 30 varieties of snakes, was formally opened at the Cincinnati zoo, May 2. This is the first time the zoo has had a permanent place to exhibit snakes, according to James A. Reilly, zoo president.

## 3-Month Sales in Cleveland Area 7,807 Units

CLEVELAND—Distributor sales of household electric refrigerators in Cleveland and Cuyahoga County totaled 7,867 units during the first quarter of 1937, exceeding by 27.1% the 6,186 units sold during the same period last year, according to reports made to the Electrical League.

Sales during March alone were 3,533 units, an increase of 5.1% over the 3,361 units sold by distributors during the month last year. April sales last year totaled 4,309 units, and it is anticipated that this year's mark for the month will pass that figure by fully 30%.

### Plan Tent Show Program

CLEVELAND — The Electrical League has scheduled a series of five "refrigeration tent shows" and an intensive program of cooperative advertising and window displays as its part in the drive to sell 30,000 electric refrigerators in the Greater Cleveland area this year.

In the "tent show" program, the League is cooperating with a number of distributors and neighborhood (Concluded on Page 2, Column 4)

## Refrigeration Jobbers In Chicago Establish Local Organization

CHICAGO—Organization of Chicago Refrigeration Suppliers, a group of wholesalers of refrigeration and air-conditioning parts and supplies who desire to protect their own interests and to further the welfare of the trade in general, has been announced by Herbert Binner, executive secretary.

Purpose of the organization, as set forth in its constitution, is "to promote the best interests of wholesalers of refrigeration and air-conditioning parts and supplies, such as to establish credit exchange, formulate trade practices and standards, promote trade, maintain favorable relations with manufacturers, and in general devise and carry on such activities which shall accrue to the benefit of manufacturers, distributors, dealers, servicemen, contractors, and the general public."

Definite assurance is given, however, "that no agreement of any kind or nature shall be entered into by or between any member or members of this organization aiming to maintain or fix price levels, or act in restraint of trade, or that may conflict in any way with any law or laws of the United States or State of Illinois."

The term "refrigeration supply jobber," as defined by the organization's constitution, means any one conforming to the group's membership qualifications, and who does no retail service work for consumers. Such a jobber may, however, do service work for the trade on a wholesale basis, providing such wholesale function is not performed merely to secure wholesale prices for the (Concluded on Page 27, Column 2)

## Cleveland Utility Bonus To Dealers Held Legal

CLEVELAND—Granting of bonuses to independent electrical dealers by the Cleveland Electric Illuminating Co. to promote use of the company's current is within the law, according to Law Director Alfred Clum.

Councilman George Travinkar, himself an electrical dealer, inquired about the legality of the practice. The law director ruled it is business promotion and that there is nothing to prevent the municipal light plant from doing the same thing to stimulate use of its current.

## Household and Commercial March Sales Set New Records

### Cleveland Dealer to Sell Ranges on Meter Plan

CLEVELAND—Electric ranges can be sold on the meter plan. So believes W. R. Kromer, vice president of Oil Heating Devices, Inc., Kelvinator commercial distributor, which has just assumed a dealership in Kelvinator "package merchandise" here.

The "package" equipment, as Mr. Kromer calls it (to distinguish it from his standard commercial line) includes refrigerators, ranges, bottle beverage and water coolers. Refrigerators and ranges were added primarily to assist the company in promoting the Kelvin Home. Oil Heating Devices is building two of them in Cleveland—but that's another story.

With the drop in electric rates effective here May 1, Mr. Kromer figures the electric range is due for a big increase, and he has picked the meter selling plan as the surest way of cashing in on the rise.

All the company's "package" equipment will be sold on the same plan, (Concluded on Page 2, Column 1)

## Frigidaire Cleveland Branch 'Recommends' Prices & Allowances

CLEVELAND—In an effort to assist its dealers in avoiding price-cutting and other retailing pitfalls about which they have been complaining, the Cleveland branch of Frigidaire Division, General Motors Sales Corp., last week issued a list of "recommendations" regarding list prices, carrying charges, trade-in allowances, and discounts.

While no adherence to the "recommendations" was imposed, dealers were given to understand that their cooperation in the program would influence their future relations with the distributor.

Recommendations made to dealers included:

Strict adherence to established list prices.

Carrying charges of not less than 5% on time payment sales.

No trade-in allowances on used ice boxes.

No discounts by dealers on so-called "industrial" sales, or sales made through purchasing agents; and, specifically, no discount to employees of General Motors Corp.

Branch officials of Frigidaire said their stand on the establishment of dealer policies was taken independently.

It had nothing to do, they said, with any activities contemplated by the Cleveland Wholesale Appliance Association, which is seeking to remedy appliance merchandising evils in this area, and of which the organization is a member.

## Republic to Distribute Crosley in Detroit

DETROIT—Republic Supply Corp. has secured exclusive wholesale distributing rights for products of Crosley Radio Corp. in Detroit and eastern Michigan, according to A. H. Zimmerman, president of the company.

The Crosley franchise covers the complete line of radios, refrigerators, and laundry appliances.

In taking over Crosley distribution in this area, Republic Supply Corp. has absorbed the Kent Distributing Co., former Crosley distributor managed by Kent Zimmerman, son of Republic's president.

### 380,100 Household Units Sold by Manufacturers In Biggest Month

DETROIT—Sales of both household electric refrigerators and commercial refrigeration machines by manufacturers to distributing outlets reached new all-time monthly highs in March.

World sales of household electric refrigerators by U. S. manufacturers totaled 380,100 units, according to estimates made by AIR CONDITIONING AND REFRIGERATION NEWS. This compares with the previous monthly record of 344,200 units established in May 1936, and with sales in March 1936 of 285,900 units.

Sales of household electric refrigerators in March by the 15 manufacturers who comprise the Household Refrigeration Section of the Refrigeration Division of National Electrical Manufacturers Association (Nema) totaled 353,557 units.

A total of 36,166 commercial refrigeration units were sold in March by the 15 members of the Commercial Refrigeration Section of the Refrigeration Division of Nema.

This surpasses the previous high monthly total of 35,613 units reported in May 1936 by the Nema members. Commercial unit sales in March of last year were 21,346 units.

Of the commercial units sold in March, 2,660 were for self-contained air conditioners.

A tabulation of the Nema household and commercial refrigeration sales will be found on page 27.

## Tom Evans Heads Civic Committee

PHILADELPHIA—Thomas Evans, president of Merchant & Evans Co., refrigerator manufacturer, and chairman of the Refrigeration Division of Nema, has been appointed by Gov. Earle of Pennsylvania to the chairmanship of a committee of 10 representative Philadelphians, to draft a new charter for the city.

Others on the charter commission include the mayor and city controller, a banker, a manufacturer, representatives of labor and clubwomen, an authority on recreation, and two attorneys, one a former attorney general of the state.

The commission will submit to the 1939 Legislature a draft of a charter to consolidate the city and county governments. A constitutional amendment, providing for this merger, is to be voted on next year.

In announcing the charter commission appointments, Gov. Earle said he had "made a sincere and honest effort to name a truly representative group."

"I feel that every school of thought, economic as well as political, has been given consideration," he said.

## Seltsam Heads Cleveland Copeland Outlet

CLEVELAND—H. O. Seltsam, formerly vice president of Copeland Refrigerator Corp., Detroit, has been named president and treasurer of Refrigeration & Appliance Corp., Copeland distributor in northeastern Ohio.

Mr. Seltsam replaces as president W. C. DuComb, president of W. C. DuComb Co., Detroit refrigeration supply jobber, who is retiring from active management of the firm's affairs, but retains his interest in the company.

H. G. Fronnapple, general manager of the company under Mr. DuComb, has been appointed vice president and sales manager under Mr. Seltsam.



## An Executive at Work in the Laboratory



Harvey Lindsay, hard-working head of Dry-Zero Corp., insulation manufacturer, is caught by the editor's candid camera in the midst of a laboratory experiment to show the importance of graining in fibers.

## Salesmen Show Great Interest in Meter Plan for Selling Electric Ranges, Kromer Reports

(Concluded from Page 1, Column 4) but Mr. Kromer believes that the very novelty of the method as applied to electric ranges will focus attention on it. As evidence of the public's probable reaction, he has the experience of his last week's sales training class.

Fourteen prospective salesmen came in Monday for a training course in retail selling. The meter plan was announced to them, and interest in its possibilities was so high that not a man dropped out all during the week. So Mr. Kromer is more certain than ever that the meter idea is a "natural."

"Why can't ranges be sold on the meter plan?" he asks. Refrigerators have been sold that way, and so have beverage coolers and washers and other appliances. Paying for things on the meter plan is no novelty to many homeowners.

"And putting ranges out on the meter plan isn't hard, either. All that's needed is a 220-volt meter, instead of the usual 110-volt one. After that, the procedure's just the same."

In Oil Heating Device's new "package merchandise" department are 21 salesmen, managed by W. H. Collard, formerly with Kelvinator's Detroit branch, and later with the People's Globe Furniture Co. in Canton, Ohio, where refrigerator sales under his direction broke records every year.

Heading the company's commercial refrigeration sales department is H. H. Dolison, one-time sales manager of Temprite Products Corp.

Installation work is in charge of D. D. Stafford, who was trained at the Kelvinator factory and at one time was installations manager of the company's Chicago branch office.

## Rex Agreement Covers Wage Raise, Hours, Seniority Rights

(Concluded from Page 1, Column 2) the strike action came as a surprise, and that the first indication they had of any trouble was when the power switch was pulled.

Both Elmer Davis, U.A.W. organizer, and Thomas Hutson, state labor commissioner, had stated that the case would be turned over to the National Labor Relations Board, but these plans were called off when further conferences resulted in a settlement.

Under terms of the agreement, signed by members of both unions, it was provided that there would be no discrimination by either group against the other, while on company property; that no further strike would be called until all peaceful methods of negotiation had been exhausted; and that no employee except a foreman had the right to shut down any line in the plant.

U. A. W. officials had called a four-day sit-down strike at the plant on March 16, demanding recognition of the C. I. O. as sole bargaining agency for the workers, but making no stipulations on wages and hours.

At that time, closing of the Davidson Enamel Co., which depended on Rex for its materials, also was forced. Terms of the settlement reached on March 19 granted workers a pay increase of 6 cents an hour, and a working week of 47½ hours. Company officials refused, however, to recognize the U. A. W. as bargaining agency for any except its own members.

## Tent Shows and Cooperative Advertising Backbone of 1937 Cleveland Sales Drive

(Concluded from Page 1, Column 3) dealers in sponsoring a series of community showings. The shows, which will run for one week each, will begin May 17 and end the week of June 26.

Five locations have been chosen for the showings, as a result of a house-to-house survey made by the League. Covering five principal sections of the city, the sites were selected because they represent spots in which refrigeration saturation is lowest, but which at the same time have high traffic-pulling value and high sales possibilities in reference to residents' buying power.

Shows will run for one week, with afternoon "performances" from 1:30 to 5 o'clock, and evening programs from 6:30 to 10 o'clock. Programs will consist of actual demonstrations of League-approved refrigerators and additional entertainment features.

While distributors will have a part in the staging of all shows, dealers in each neighborhood will participate in the programs held there.

So that refrigeration, and not specific products, will be the guiding theme of the show, the League has specified that all exhibits shall be of one size, and shall be similar in several respects. At least one unit in each exhibit is to be in operation, and a maximum of eight refrigerators may be shown.

The tents, 60 x 150 feet in size, will be put up on the Saturday preceding the Monday on which the show is to start, the League handling these details. Refrigerators to be displayed will be furnished by cooperating distributors, and will be delivered by specific trucking companies, to assure safe handling.

Entertainment at the afternoon and evening performances will consist of five juvenile talent acts from radio station WTAM, and will feature "Uncle Bill," a well-known Cleveland radio personality, and his hunt for promising juvenile radio material.

Programs in the "search for talent" series will be broadcast direct from the tent headquarters during the duration of the shows. This is expected to act as an additional crowd-puller.

Capacity of the tents is 1,000 people per performance, and 400 of the seats will be "reserved" for prospects who obtain tickets from their neighborhood dealers participating in the shows. To obtain tickets, prospects are required to register their name and address, together with the names of appliances they own and those in which they are particularly interested.

A score or more of door prizes will be given away at each performance, participation being limited to those who are in the "reserved" seat section. Winners must call back on their dealer to obtain the awards, exposing themselves a second time to his sales efforts. Only participating dealers will be given tickets to pass out.

The League's campaign of cooperative newspaper advertising broke May 1 in both metropolitan and community papers, and will continue to July 31. Two plans of cooperative activity have been outlined, to apply to both large and small dealerships.

With large dealerships (including department stores), the League will participate in advertising up to a maximum of 1,080 column inches. Minimum linage which these dealerships must take to share the co-operation is 360 column inches.

Advertisements devoted exclusively to refrigeration must total at least 20 column-inches, although in the case of department stores the refrigeration section of the ad may be considerably smaller in size.

League-approved refrigerators only are to be covered in the advertisements, and the League seal of approval must be carried. All ads must carry the slogan, "An Electric Refrigerator Pays for Itself," in type not smaller than 12 point size.

In the case of smaller dealerships, League cooperation is limited to a select list of foreign language and community newspapers, with maximum space not to exceed 540 column inches, and minimum space set at 180 column inches. Otherwise the same conditions apply as to the larger outlets.

On all advertisements meeting these requirements, the League will participate up to 25% of the space rate paid, figured at the regular black-and-white rates.

During the period May 1 to June

1, distributors participating in the refrigeration campaign will sponsor a series of three spot announcements daily over principal Cleveland radio stations. Morning, afternoon, and evening "spots" will be picked for the announcements, which will feature refrigeration use rather than individual products.

Throughout the campaign period, the League will open its eight-window display center at Euclid and 13th Sts. to special distributor displays. Windows will be drawn by lot, and displays will be limited to one week at a time. This corner, one of Cleveland's main traffic spots, is expected to draw attention of thousands of prospects to refrigeration during the campaign period.

The League is continuing its series of "Refrigeration Breakfasts" this year. Five meetings have been scheduled, starting April 22 and ending May 24.

Speaker at the opening breakfast was Elmer Wheeler of Tested Selling, Inc., New York City. G. W. Allison of Edison Electric Institute was scheduled to address the second meeting, May 3.

Frank Lyons of Frigidaire Corp., Dayton, will be the speaker at the May 10 breakfast meeting, and Harry L. Fogleman, Chicago, at the May 17 meeting. Speaker for the final meeting May 24 has not yet been selected.

## Copeland, MESA Agreed On All Points but One

(Concluded from Page 1, Column 1) points had been reached during conferences this week, according to J. G. McLeod, Copeland sales manager. After both sides had agreed to abide by decisions reached by a conference of company officials and union representatives, M.E.S.A. withdrew pickets and strikers returned to work awaiting a settlement.

All workers who had been out on strike had returned to their production department posts, Mr. McLeod declared Tuesday.

The remaining point of dissension upon which the company-union conference is seeking agreement is said to be determination of a new method of wage payment. Both sides declined to comment on this phase of the negotiations.

"We believe that the present negotiations will result in elimination of all differences between Copeland Refrigeration Corp. and members of the union in our plants," Mr. McLeod said.

Following discharge of J. Moran, a tool grinder, for inefficiency several weeks ago, and resignation of D. Paris, another production department employee in "sympathy" with Moran, M.E.S.A. officials demanded reinstatement of the men in a letter addressed to Copeland's production manager.

## 'End Chiseling', Chicago Distributors Asked

(Concluded from Page 1, Column 1) delphia, the bulletin points out, says that it has found the answer to "chiseling" in cooperation between distributors.

If local distributors would cooperate in a similar move, the Association holds that there would be little trouble in correcting most of the price-cutting practices in this area.

"Philadelphia already is doing what this association had pleaded and urged distributors to do here," the bulletin states. "In Philadelphia, apparently it is possible for distributors to work harmoniously together for the good of the entire industry—to support and help their retailers in working out a condition whereby prices are maintained and everybody does a nice business."

"It is to our shame that in Chicago at present such a condition apparently cannot exist. With the exception of some of the radio distributors, we find generally an attitude of distrust and suspicion prevailing which effectively blocks any concerted action against the ills of the industry."

"Until distributors work together and with this organization, conditions in the Chicago appliance market will be far from satisfactory. And in this case it is the dealer who pays, and pays, and pays."



## BALSAM-WOOL FIBRE SEALED SLABS

Sixteen out of 29 nationally known makes of refrigerators use Balsam-Wool Fibre Slabs. In 1936 alone, more than 750,000 cabinet sets of Balsam-Wool Fibre Sealed Slabs were used by leading manufacturers!

Balsam-Wool Fibre Sealed Slabs have proved their superiority in more than three million refrigerators, to date. No other insulation is used in so great a volume for domestic refrigerators.

Why? Because . . .

Today, Balsam-Wool Fibre Sealed Slabs are fabricated in the plants of the refrigerator manufacturers on special licensed machines. The fibres are shipped to the manufacturer in compressed bale form. The advantages of low inventory and saving floor space in addition to freight costs are obvious! Furthermore, the machines are so flexible that the manufacturer can change the size or shape of the slabs he requires on a moments notice.

Get complete details about why Balsam-Wool Fibre Sealed Slabs are America's No. 1 insulation. Write us for the facts.

## WOOD CONVERSION COMPANY

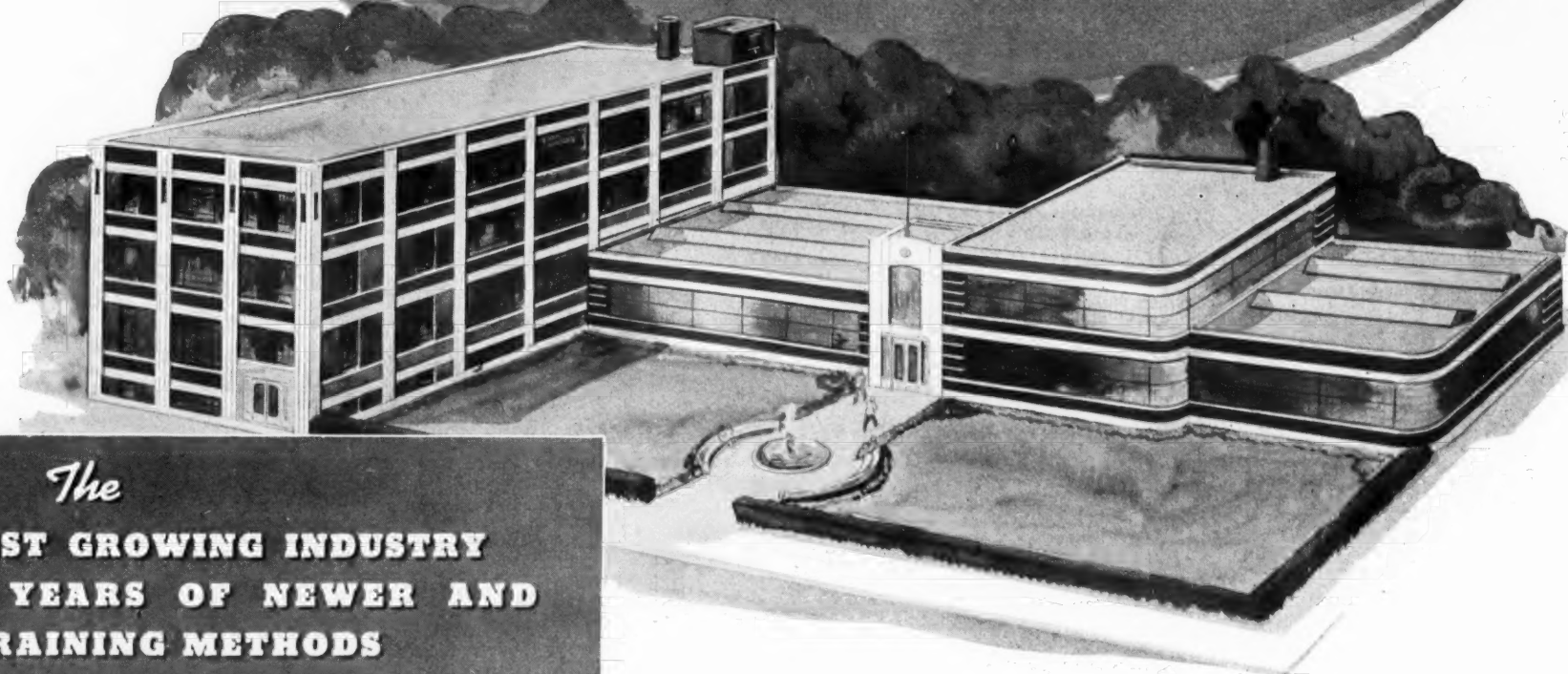
Refrigeration Sales Division • 360 N. Michigan Ave., Chicago, Ill.  
St. Paul, Minn. • New York, N. Y.

**BALSAM-WOOL**  
FIBRE SLABS  
PRODUCT OF Weyerhaeuser



# An ACHIEVEMENT And a PROMISE

To the right is an architect's rendering of the home of the Refrigeration and Air Conditioning Institute, as it will appear by the end of 1937. The three-story and basement building to the left of the drawing is the present Administration Building. The two-story section of the longer building is the present Laboratory and Shops. The new sections to be built, and the older sections to be remodeled, will be of glass brick wall construction. Shops and Laboratories will be completely air conditioned and will house more than \$250,000.00 worth of equipment. Present facilities provide 30,500 square feet of floor space. When completed, this will be increased to approximately 54,000 square feet.



*The*  
**WORLD'S FASTEST GROWING INDUSTRY  
LOOKS AT TWO YEARS OF NEWER AND  
BETTER TRAINING METHODS**

## THE STAMP OF APPROVAL

In the Institute's first announcement, made two years ago, fifteen concerns were listed as endorsing the training program then outlined. Today the list has grown to more than fifty. The confidence and cooperation of these concerns expressed in their endorsement has

been, and will continue to be, a constant incentive toward better training and better and more useful service to the industry.

Below are the firms who have given the Institute their "official" endorsement.

American Blower Corporation  
American Radiator Company  
Baldwin-Southwark Corporation  
Brunner Manufacturing Company  
Carbondale Machine Corporation  
Carraway Engineering Company, Inc.  
The Celotex Corporation  
The Cooling & Air Conditioning Corporation  
Copeland Refrigeration Corporation  
The Crosley Radio Corporation  
Curtis Refrigerating Machine Company  
Cutler-Hammer, Inc.  
Detroit Lubricator Company  
De La Vergne Engine Company  
Fairbanks-Morse Home Appliances, Inc.

The Fox Furnace Company  
Frosted Foods Sales Corporation  
General Household Utilities Company  
Gibson Electric Refrigerator Corporation  
Gilfillan Bros., Inc.  
Gilson Manufacturing Company, Ltd.  
Hig Electric Ventilating Company  
Johns-Manville  
Kauffman Air Conditioning Corporation  
Kelvinator Corporation  
Kelvinator of Canada, Limited  
Landers, Frary & Clark  
Lewis Air Conditioners, Inc.  
Jas. P. Marsh Corporation  
Merchant & Evans Company  
The Mercoid Corporation  
Mills Novelty Company

Minneapolis-Honeywell Regulator Company  
Norge Corporation  
O'Keefe & Merritt Company  
Owens-Illinois Glass Company  
Perfection Refrigeration Parts Company  
Penn Electric Switch Company  
The Powers Regulator Company  
Scott-Newcomb, Inc.  
Servel, Inc.  
The Sparks-Withington Company  
Standard Air Conditioning, Inc.  
Stewart-Warner Corporation  
B. F. Sturtevant Company  
Sunbeam Electric Manufacturing Company  
Super-Cold Corporation  
Universal Cooler Corporation  
Universal Cooler Company of Canada, Limited  
Young Radiator Company

## THE BOARD OF GOVERNORS

The activities of the Institute, including especially the preparation of material and the conduct of the training are under the direct supervision of the Board of Governors whose members were appointed by some of the en-

dorsing manufacturers. The members of this board come from their various factories, at regular intervals, for conferences which are held at the Institute's Administration Building in Chicago.

**J. R. CAMERON**  
National Service Manager  
Norge Division-Borg-Warner Corporation, Muskegon

**E. T. MURPHY**  
Vice President  
Carrier Corporation, Chicago

**E. A. SEIBERT**  
Director of Service, Kelvinator  
Division of Nash-Kelvinator Corporation, Detroit

**CHAS. D'OLIVE**  
Manager, Products Division,  
Stewart-Warner Corporation,  
Chicago

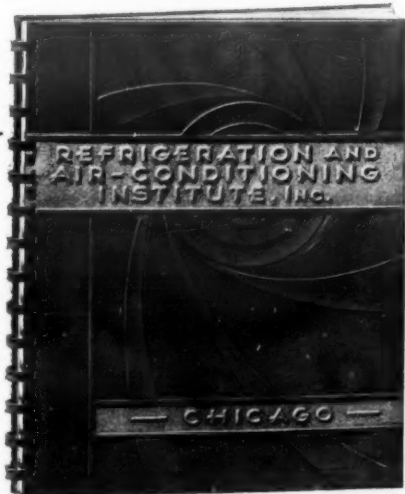
**C. L. OLIN**  
Manager, Electric Refrigeration and Air Conditioning  
Division, Servel, Inc.,  
Evansville

**A. G. SUTCLIFFE**  
Chief Engineer, Hig Electric  
Ventilating Company, Chicago

## MAY WE SEND THIS BOOK?

This cloth bound, "Report to the Industry", with 200 pages and 15 original photographs, tells the whole story of Refrigeration and Air Conditioning Institute training. Included in it are reproductions of original letters showing what many of the industry's leaders think about the training. Also, many facts that indicate how the Institute's training program and services can be of the greatest benefit to every employer in the field.

Obviously this book cannot be made available to everyone, but we wish every distributor, dealer, refrigeration and air conditioning executive and engineer to have a copy. If you do not already have it, please ask for Book "O" on your letterhead.



TWO years ago we announced to the Refrigeration and Air Conditioning Industry, a new and revolutionary training program which had been in preparation for the two years previous. We described this training as having been prepared to assure the industry an adequate supply of men, properly trained for installation and service engineering work at all times. And we promised . . . pledged our facilities and our twenty years experience in training men . . . to do the best job of training that has ever been performed.

Now . . . two years later . . . we report on our activities with the belief that we have done a good job . . . that we have made good on our promise and performed a real and beneficial service to the industry. Several hundred of the industry's leaders, who have recently visited the Institute, have told us so. Here is what a few of them said:

"You are doing the finest job of training that has ever been done in this or any other industry."

"Every manufacturer, distributor, dealer and contractor should know of the work you are doing."

"We believe you are doing a splendid job and are glad to continue a representative of our company on your Board of Governors."

"Your work is a very necessary part of the development of air conditioning, for one of our greatest difficulties is the lack of properly trained men."

We are proud of what we have accomplished to date, but realize at the same time that the real credit for our success goes to the industry itself. There is hardly a manufacturer in the field but who has cooperated with us in some way. Only through this cooperation, and particularly because of the splendid work of the members of our manufacturer-appointed Board of Governors, has this success been possible. Today, more than fifty leading manufacturers are officially endorsing the Institute and its training and among those who have been enrolled are several hundred men who have been accepted on the direct recommendation of these firms.

There is no "gate crashing" in the Institute's

program. Only qualified men are accepted for training and these are carefully selected on the basis of education, experience, mechanical aptitude and character.

Selected men are first given over 800 hours of preparatory training in their own homes, which gives them a wide and basic knowledge of fundamental principles and the application of these principles in actual practice. Following the satisfactory completion of this work they are brought to Chicago, with round-trip transportation furnished by the Institute, where they receive 100 hours of practical work and instruction, in the Institute's Laboratory and Shops. All of this training . . . both preparatory and shop work . . . is carried on by competent engineer instructors under the supervision of the Board of Governors, thus assuring that every man accepted is trained exactly as the industry wants him trained.

Complete and detailed records of men completing the above work and receiving the Institute's Certificate are available on request to prospective employers. Correspondence, describing personnel requirements is invited.

The Institute has now in preparation, under the supervision of its Board of Governors, an entirely new and more far-reaching Air Conditioning training program. This, with a greatly enlarged personnel and more extensive facilities in buildings and equipment, will permit an improved and larger service to your industry by the end of this year. A major feature of this newer program will be four weeks of practical shop training, consisting of more than 200 hours of attendance instead of 100 hours as now permitted.

With sincere thanks to the industry for its confidence in the Institute, and its splendid cooperation in helping us carry out our aims and purposes, we renew the pledge made two years ago . . . to strive constantly to do the best job of training men for your technical needs that has ever been done.

We ask your continued cooperation so that we may continue to serve you . . . and serve you better each year.

*Ray B. Smith*  
PRESIDENT

Refrigeration and Air Conditioning Institute · 2130-2158 Lawrence Avenue · Chicago



## WHAT DEALERS ARE DOING

### Future of Trade-in Problem Concerns Cincinnati Dealers; Flood Actually Aided Business, One Dealer Says

(Concluded from Page 1, Column 2) amount, of course, is entirely dependent upon the price of the new unit the customer is purchasing. In other words, the less expensive the unit, the less allowance we will offer."

Ice boxes are definitely out when it comes to trade-ins, Mr. Overbrook declared. He admitted, however, that sometimes in order to make a sale such boxes were purchased outright and then donated to the Salvation Army or Goodwill Industries.

"We try to discourage trade-ins," he said, "by asking the customer why he is purchasing a new refrigerator. When he explains that he is not satisfied with the operation of his old unit, we quickly point out that if the unit doesn't satisfy him, it probably wouldn't satisfy anyone we might sell it to. Then we usually suggest that the customer either use his old unit in a summer cottage, or else donate it to charity."

"And surprising as it may seem," Mr. Overbrook claimed, "this sort of approach eliminates a great deal of our trade-in difficulty. What trade-ins we accept, however, are reconditioned here as much as necessary and sold from our own sales floor."

"All refrigerator service is handled by the distributor during the unit's guarantee period," Mr. Overbrook told us, "but we maintain our own service department for work on old boxes and those used for floor display."

Explaining that the store's policy did not allow for cooking schools or other special promotional stunts, Mr. Overbrook said that both display and classified newspaper ads were the mediums most commonly chosen to carry the store's message.

Wurlitzer salesmen, he stated, operate on a combination salary and commission basis, and do very little work outside the store.

#### Rotogravure Advertising Effective for Pogue's

Trade-ins haven't seemed to bother Joe Martin, appliance manager of Pogue's department store, G-E dealer, much as yet, for only about 10% of his sales involve them. And besides, his department has managed to make an average profit of 20% on each trade-in deal. But he firmly believes that they will constitute a dangerous problem next year unless something is done to control them.

Remote installation units, where the compressor is separated from the cabinet, are the ones which cause the real trade-in trouble, in Mr. Martin's opinion.

Pogue's refrigerator sales are coming along nicely, said Mr. Martin, and

at present stand about 25% above those for the same period last year.

"As for advertising," said Mr. Martin, "we rely principally on the newspapers. We have had tremendous success with ads placed in the Sunday rotogravure section. Whenever we feature refrigerators in our windows, we use our own displays and don't bother with factory material."

"We do very little in the way of special promotion," he concluded, "but we do put on one cooking school every year through the co-operation of the factory and the distributor."

#### Price Raises Put Damper On Kreimer Business

Frequent price raises have had more to do with holding back refrigerator sales of Kreimer's furniture store this year than have the effects of the Ohio river flood, in the opinion of Fulton Cain, manager of the store's appliance department.

"Certainly something has hit our sales during the last 30 or 60 days," he exclaimed. Kreimer's, Kelvinator and Crosley dealer, has recently added the Hotpoint line.

Mr. Cain also gave voice to the almost universal protest against chiseling, especially in regard to trade-in allowances.

"I manage to get along pretty well," he explained, "simply because experience has taught me how to chisel a little better than the other guy."

"Our trade-in policy here," he continued, "is to offer whatever we find necessary to close the deal. Reconditioning of used boxes is handled through the distributor, and then they are resold from our own sales floor. I'd say that 60% of all our sales are made on a trade-in basis."

Billboard advertising is the most recent innovation in Kreimer's refrigerator and appliance advertising, Mr. Cain stated. Some newspaper advertising is also used, he said.

"We also believe in taking advantage of such advertising opportunities as food shows or builders' shows," he explained, "and usually maintain an exhibit at Coney Island, local amusement park, during its period of operation."

"Several repossession were made necessary by the flood," Mr. Cain told us, "in spite of the fact that we provided for considerable extension of credit. Until the flood came, however, we had not repossessed more than a half-dozen boxes during five years' time."

Kreimer's salesmen operate on a commission basis, but they are also allowed a drawing account, said Mr. Cain, and the company's service work is all handled through distributors.

Climaxing his remarks with an-

other complaint about the amount of chiseling in the refrigeration industry, and the way that this practice eats into the dealer's profits, Mr. Cain asserted that he is seriously considering "quitting this business and getting into something where I can make some real money."

#### Ice Box Trade-ins Make Doerfler Mad

C. Doerfler, owner of Doerfler Electric Co., Frigidaire dealership, also thinks that "something should be done about trade-ins."

"Our refrigeration business is just starting to get going this year," he explained, "but prospects for the future aren't so good unless something is done to control the trade-in problem."

"What trade-in allowances we do make," he said, "are based on our own appraisals." Asked if he accepted ice boxes on trade-ins, Mr. Doerfler's answer was definitely negative. "When they mention ice boxes," he declared, "we're mad already."

All display material which Mr. Doerfler uses is of factory origin, and all of his service work is handled through the Frigidaire distributor.

#### Brown Says Flood Jumped Business

Contrary to the opinion of most Cincinnati refrigerator dealers, W. C. Brown, president of Brown-Twenhofel Co., Hotpoint, Grunow, Apex, and Electrolux dealer, believes that the flood has stimulated his refrigerator business, if anything.

"You see," he reasoned, "the people of Cincinnati are on the whole a thrifty lot, and many of them have financial reserves tucked safely away somewhere. Those whose homes were damaged or destroyed by the flood dug into these reserves and spent considerable money in rehabilitating their family possessions."

"Thus the flood, through this rehabilitation which it necessitated, actually stimulated the circulation of money in this territory, and this increased monetary circulation in turn stimulated business in general."

Refrigeration service work necessitated by the flood was handled

either through distributors or manufacturers, Mr. Brown reported.

"We do our own washing machine servicing, however," said Mr. Brown, "and we are still far behind on the washer service caused by the flood."

He then explained that sales and service of washing machines was really the company's original business, and that it still occupied a major share of the company's attention. Apex, Easy, Maytag, and Conlon washers were on the floor.

When questioned about refrigerator repossession resulting from the flood, Mr. Brown assured us that they had not increased at all.

"In fact," he declared, "we even had some people come in and make payments on their refrigerators while their homes were inundated."

#### Commercial Selling 'Cleaner' Haas Reports

E. A. Haas, commercial manager of Barger, Inc., G-E dealer, was the only commercial refrigeration man we were able to contact. In addition to its G-E line, Barger handles Puffer-Hubbard and Seeger display cases

and Russ beer cooling equipment for the territory within a 50-mile radius of Cincinnati.

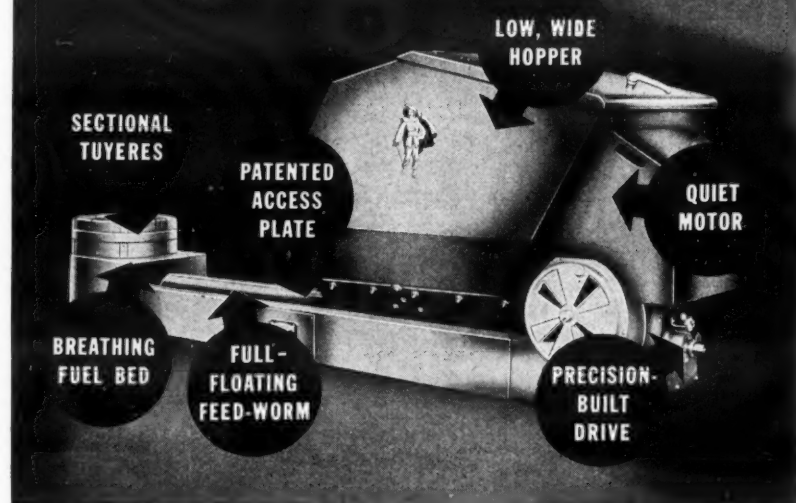
Mr. Haas reported 31 commercial installations since the first of the year, 60% of which were in restaurants. Only 15% of the 31 installations were industrial applications.

Only about 50 commercial service calls were received by Barger, Inc., as a result of the flood, Mr. Haas said, because most business establishments had foresight enough to remove motors and other damageable equipment before the flood water reached it.

"The only ones who got stuck," he explained, "were those who hung on 'till the last minute in an effort to make every possible penny. And the funny part of it is that they were just the ones who lost in the long run."

The practice of chiseling, Mr. Haas informed us, is not nearly as prevalent in the commercial field as it is among domestic dealers. The only department of the commercial field where such practices exist to any marked degree, he pointed out, is in the display case business. "And there," he said, "it's really bad."

## Step in with Combustioneer AND GET THE STOKER BUSINESS



### WHETHER FOR COTTAGE OR SKYSCRAPER, THERE'S A COMBUSTIONEER TO FIT THE JOB

★ Now, with the new Model No. 2 Combustioneer, illustrated above, you have what it takes to crash the gate of the tremendous mass market for coal stokers—the small home market.

Today Combustioneer gives you models sized right and priced right to meet every stoker requirement. With the great Combustioneer line, ranging in capacity from 18 to 1,200 pounds of coal per hour, you have everything you need to bag the stoker business of your community.

Combustioneer is the kind of product you want to sell. It causes

you no servicing grief. It involves no trade-ins to cut your profits. It stays sold. It makes friends who will give you leads to other prospects.

And Combustioneer changes the slack appliance season to a period of peak profits. It enables you to avoid turnover in your selling force and hold your good salesmen the year around.

If you want a real money-maker, investigate the Combustioneer Franchise. Write us today to have a representative call on you and give you

all the facts. Address, Combustioneer, Springfield, Ohio.



THIS YEAR IT'S

## Combustioneer AUTOMATIC COAL BURNER

FOR HOMES, APARTMENTS AND FACTORIES

DIVISION OF THE STEEL PRODUCTS ENGINEERING CO.

## COLD FACTS

### ABOUT REFRIGERATOR DOOR GASKETS

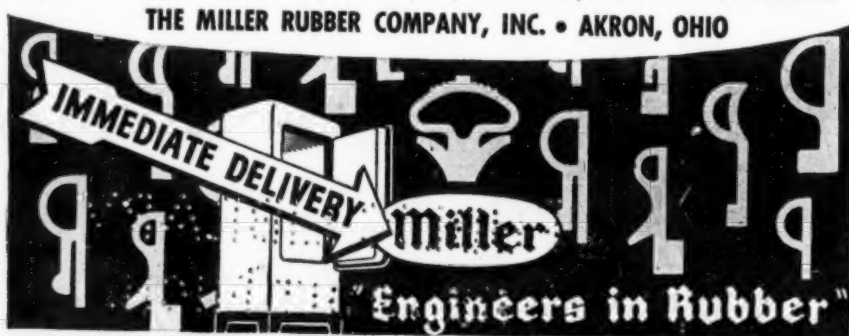
★ One out of four refrigerators now in use is in need of door gasket replacements. That means hundreds of prospects right in your own community. It's an easy service to sell—not costly—vitally important to safe, economical refrigeration—and every sale represents a worth-while profit.

As to a dependable source for gasket supplies—let Miller carry

that responsibility for you. You can service 80% of all refrigerators made from the Miller simplified line of 20 gasket types. Complete stocks insure immediate delivery. Order them as you need them.

Here is a wide-open market for wide-awake service men. Why not go after this profitable business in 1937? Get illustrated price list from your local jobber, or write direct.

THE MILLER RUBBER COMPANY, INC. • AKRON, OHIO



### HOW CAN I GET RID OF SERVICE REPAIR PROBLEMS?



## Swing OVER TO Coolerator The Air Conditioned Refrigerator



BIG FAMILY SIZE SELLS FAST AT... \$79.50

You pocket all the profit on every Coolerator sale—instead of squandering it on repairs. For this modern refrigerator has no machinery or moving parts to get out of order... never plagues you with service problems.

Exclusive features make it easy to sell Coolerator: air conditioned—washed, humidified, circulated cold air... "Fresher foods at half cost"... ice cubes in five minutes.

Backed by strong national advertising, already more than a quarter million Coolerators are now in use. They range from the compact 2½ cubic foot model to the huge 50 cubic foot commercial type. Prices start as low as \$39.75. It will pay you to write today for all the facts.

The Coolerator Company Duluth, Minnesota



# To the beauty shop proprietor

## AIR CONDITIONING Means COMFORT COOLING



**B**EFORE the advent of "air conditioning," beauty salons were accustomed to decreased volume during the summer months. Seasonal losses due to heat and high humidity were accepted as being normal business hazards.

When summer brought hot weather to beauty salons and the heat was further increased by an insufferable B.t.u. load generated by beauty shop equipment, women couldn't take it. For shampoos, finger waves and permanents they stayed away in droves.

Theaters and restaurants had also been confronted with summer losses before comfort cooling solved their seasonal problem and it was natural for the beauty shop proprietor to consider "air conditioning" as a source of increased summer revenue.

The installation of "air-conditioning" equipment in beauty salons for the purpose of comfort cooling in summer time received immediate favorable reaction on the part of customers. Women were quick to appreciate this new advantage and patronage in beauty shops converted losses into profits. Today, comfort cooling is universally recognized as the remedy for the seasonal slump in the beauty shop business. To the beauty shop proprietor "air conditioning" means comfort cooling.

To the thousands of women who patronize beauty shops and who have discovered that "air conditioning" means comfort and relaxation during periods of heat waves—to them "air conditioning" means comfort cooling also.

As a result of the first impression of "air conditioning" gained in public places—theaters—restaurants—beauty parlors—to the general public "air conditioning" means comfort cooling and it isn't "air conditioning" unless it contains the cooling function.

With this impression firmly established in the public mind, the refrigeration industry which developed the cooling and dehumidifying function and dramatized it to the public is looked to as the source of supply for "air-conditioning" equipment.

Distributors and dealers and their sales organizations who have been so successful in selling and installing refrigeration equipment of all kinds are the logical outlets for "air conditioning." Many of them are today outstandingly successful in marketing "air-conditioning" equipment, many more are entering this newer field. Manufacturers may effectively establish contact with this group of businessmen through the advertising columns of "The Newspaper of the Industry."

**AIR CONDITIONING AND  
REFRIGERATION NEWS**  
5229 CASS AVE., DETROIT, MICHIGAN

Representatives: John B. Gallagher Co., Incorporated, 11 West 42nd Street, New York, New York . . . . . Lewis & Noelle, 612 North Michigan, Chicago, Illinois



## COMMERCIAL NEWS

### Water-Cooling System Serves 800 Employees

WICHITA, Kan. — A circulating water system supplying drinking water to 30 bubbler outlets has been installed in the plant of Coleman Lamp & Stove Co. by G. B. Govits & Co., Servel distributor in this territory. The plant employs 800 people.

Equipment includes one of the largest high suction pressure coolers manufactured by Day & Night Water Heater Co. This insulated tank cooler is capable of supplying 200 gals. of cooled water per hour and has a storage capacity of 100 gals.

Bubblers are connected by 1,000 ft. of pipe insulated with ice-water thickness cork. Another smaller Day & Night cooler is also included in the installation.

A Servel model WAO-500 and a model WD-75 machine unit provide refrigeration for this circulating system.

### Hussman-Ligonier Adds to St. Louis Factory

ST. LOUIS—The Hussman Ligonier Co., manufacturer of commercial refrigeration equipment, has completed a 4,000-square-foot addition to its plant at 2400 North Market street here at a cost of \$10,000. New equipment costing \$5,000 has been installed.

### College Bulletin Says Farms Are Installing Own Refrigeration

STATE COLLEGE, Pa.—Modern farms are installing their own refrigeration facilities instead of continuing to pay space charges to a centrally located community cold storage plant, said G. A. Rietz in an article published in the Penn State Farmer. The article dealt with the various farm uses for electricity.

By means of refrigeration, he pointed out, such perishable products as fruit, vegetables, dressed poultry, and other meat can be:

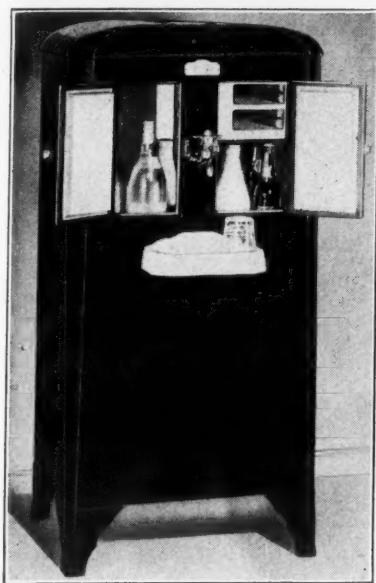
1. Improved in appearance and marketability for immediate sale.
2. Held out of a flooded market until prices rise.

He added that modern control of temperature and humidity makes it possible to keep produce in its original condition.

### Wyatt Reports Steady Increase In Western Canada Business

CALGARY, Alberta, Canada—W. T. Wyatt, Toronto, Canadian representative of Servel, Inc., reported a steadily increasing market for mechanical refrigeration while here on a western business trip recently.

### Beverage-Food Cooler



New Puro water cooler, showing refrigerated food and beverage storage compartments.

### Puro Introduces Cooler For Beverages, Foods

NEW YORK CITY—Puro Filter Corp. of America has added a new combination beverage and food cooler to its 1937 line, reports A. Galston, vice president.

This new model, known as NR, not only supplies chilled drinking water, but it also has a double compartment which can be used for storing food or beverages. This compartment has a capacity of nearly 2 cu. ft.

There is also a quick-freezing compartment which can be used for food or beverages that have to be kept at temperatures below freezing.

Storage space is directly refrigerated from the low side, and its temperature controls the operation of the condensing unit. Access to the storage space, which is lined with stainless steel, is provided through two small doors.

Model NR can be equipped with either a 1/2 or 1 1/2-hp. unit.

### 106-Ft. Display Case Installed In Detroit Market

DETROIT—One hundred and six feet of continuous refrigerated display counter have been installed by Gratiot Fixture & Supply Co., Detroit dealer for C. Schmidt Refrigerator Co.'s products, in Tom's Quality Market, 14922 Kercheval.

The equipment, a unified assembly of "Thesco" counters, is cooled by a 3-hp. Universal Cooler refrigerating unit. A similar installation has been made in the Tom's Quality Market at 14200 E. Jefferson.



Every A-P Thermostatic Expansion Valve is triple-tested as a complete unit before it can find its way into service.

### Schultz Lists Blower Unit Specifications For Cooling Below Freezing Temperatures

By J. O. Schultz, Manager, Fin Coil Dept., Rempe Co.

If your customer comes to you and wants to hold a keg beer storage cooler at 25° F. with a blower unit, do you say, as many do, "It can't be done?"

You possibly have read or heard that blowers should not be used for temperatures under 38° F.

We know that blower units can and have been used for temperatures as low as 20° F. Successful installations have been made that prove this statement.

Blowers or unit coolers have been used for many varied refrigeration purposes. Some have been successful, some passable, and others failures. The failures, naturally, are the ones that are remembered, and are magnified in the telling to the extent that the application of blower units receives a serious set back.

Blower units can be designed for any purpose, but to take the regular commercial stock units and attempt to use them under all conditions will prove disastrous.

A great deal of the blame for the failure or improper functioning of blower units can be attributed to the manufacturers themselves, as some of the information contained in the various catalogs, while not exactly untruthful, was misleading.

It seems that the main idea was to list the largest possible capacity ratings in B.t.u. without definitely stating under what conditions these ratings could be secured. Where some of the conditions were defined, it usually was in smaller type.

Blower unit coils, when used with methyl chloride, Freon or sulphur dioxide at a suction-gas temperature not lower than 18°, can be constructed of copper tubing with aluminum fins or with copper fins.

minum fins or with copper fins.

Where blower units are used in refrigerators with temperatures below 30° and a suction-gas temperature under 18°, we contend the coils should be constructed of steel tubing with steel fins hot-galvanized after fabrication, or of copper tubing with copper fins hot-tin-dipped. This hot-galvanizing or hot-tinning will seal all possible crevices at the edges of the fin where it meets the tubing; and, if ice forms on the tube, this construction prevents any damage to the coil.

We also contend that blower unit coils, when used with ammonia as the refrigerant, must be constructed of steel tubing and steel fins hot-galvanized. Steel tube coils can be used for any refrigerant.

The spacing of the fins on the tubes must also be given proper consideration, as the fins should be spaced farther apart for low-temperature refrigeration, and also for low-temperature refrigerant gas. In some cases, although the refrigerator temperature may be above freezing, the fin spacing has to be wide if the refrigerant gas temperature is held very low.

Applications of blower units for the refrigeration of products that are harmed by dehydration must be given special consideration. Standard listed units are not to be used, as these units usually have too high an air outlet velocity.

These applications also require the condensing unit to be operated at as high a suction-gas temperature as possible; therefore, the temperature difference will be small and will require a blower unit of large size and low air velocity.

### Sub-Zero Temperatures Held In 3 New Truck Units

BATAVIA, Ill.—Temperatures between -10° and 3° F. are maintained in three new ice-cream delivery units recently built by Batavia Body Co. for Saxet Ice Cream Co. of Houston, Tex.

Each truck body carries 420 gallons of ice cream and is refrigerated by three Kold-Hold units which are connected to the ice-cream plant's ammonia system at night. Six inches of Dry-Zero insulate roof, sides, and ends of the bodies, and 6-inch cork, the floors. Dry-Zero Sealpad and blanket are used in combination.

Upper panels of the bodies are painted cigarette cream and lower panels a light-to-medium chocolate. Each body is 92 inches in length and 60 inches in width on the inside, and the bulk ice-cream compartment is 36 1/2 inches high.

### 2 Super-Cold Installations Made in Fall River

FALL RIVER, Mass.—Super-Cold ice cream freezers have been installed in Leo's gasoline service station and in a Chinese laundry by New England Super-Cold Co.

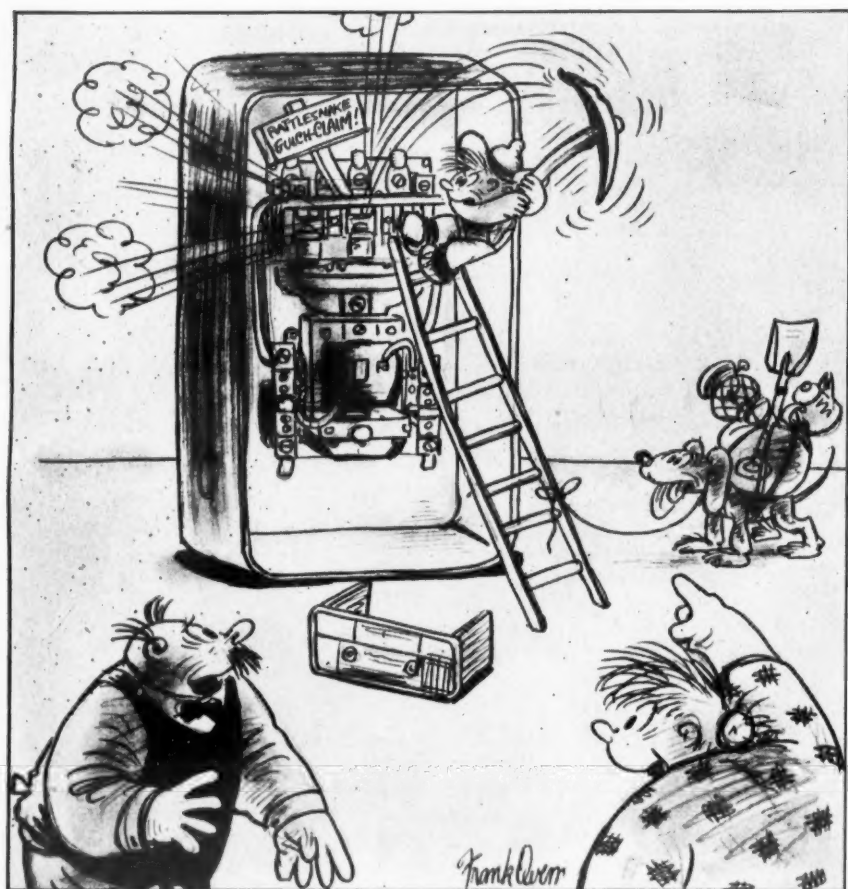
### York Orders Booked Show 60% Increase

YORK, Pa.—Orders booked by York Ice Machinery Corp. during the first six months of its fiscal year, ending March 31, totaled \$10,047,045, an increase of 60% over the \$6,283,138 booked during the same period of last year, according to President W. S. Shipley's report to stockholders.

Companies installing York dairy equipment during the half-year period included the Borden Co., National Dairy Products Corp., Beatrice Creamery Co., and A & P Tea Co., Mr. Shipley reported.

Sales of general refrigeration equipment were made to Premier Pabst Brewing Co., Armour & Co., and the John Morrell Packing Co. Included in this group was an order from Independent Ice Co., Baltimore, for machinery having ice-making capacity of 200 tons per day, to replace an original York installation made some 40 years ago.

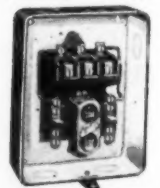
Recent installations in the air-conditioning field, Mr. Shipley said, included Ford Motor Co., F. W. Woolworth Co., Virginia Dare Stores, Warner Brothers Theaters, Continental Life Insurance Co., Shell Oil Co., and the Mayflower hotel, Washington, D. C.



"Somebody told Philbert there was silver in those contacts!"



Bulletin 709 Automatic solenoid starters for squirrel-cage motors.



Bulletin 609 Hand-operated starters for squirrel-cage motors.



Bulletin 700 Automatic solenoid relays. Over 300 different types.

Philbert is right! There is silver in the double break contacts of Allen-Bradley motor starters—plenty of it. That's why these contacts never require any filing. And not being filed, they last many times as long as ordinary copper contacts.

Because of their efficient solenoid magnets, Allen-Bradley starters will not cause motor shut-downs when line voltage drops. Hence, they are ideal for air conditioning and refrigeration service. Ample wiring space, accessible terminals, white interiors, and numerous knockouts make installation easy.

Allen-Bradley manufactures a complete line of motor control, including automatic solenoid starters and relays, and hand-operated starters. Write for new booklet "The Story of the Solenoid Starter."

Allen-Bradley Company



1313 S. First St. Milwaukee, Wis.

**ALLEN-BRADLEY**  
SOLENOID MOTOR CONTROL



## 86 CONDENSING UNITS FROM 1/6 HP TO 30 HP

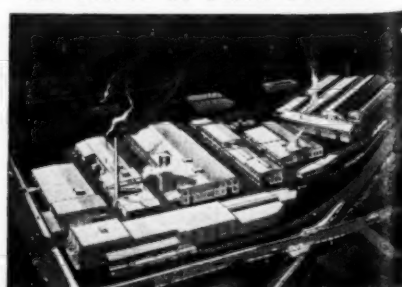
● Curtis makes 41 air-cooled units in sizes from 1/6 HP to 5 HP, inclusive, and 45 water-cooled units in sizes from 1/3 HP to 30 HP, inclusive.

Curtis water-cooled units may be obtained with counterflow condenser in sizes from 1/3 HP to 15 HP — and with cleanable shell and tube condensers in sizes from 3 HP to 30 HP. Each unit is built to meet specific requirements — separate types for air conditioning. Special types also available for ice cream cabinets, refrigerated trucks — self-contained units for display cases, etc. Unit coolers and coils to match are always available.

The Curtis line is complete — with a unit to meet the needs of most any type and size of installation — whatever your requirements. Complete specifications and installation data gladly sent on request.

Represented in Canada by  
Canadian Curtis Refrigeration Co., Ltd.  
20 George St., Hamilton, Ontario

### 20 Acres of Plant Facilities

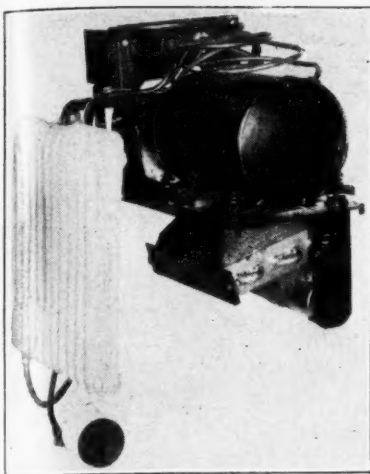


**CURTIS**

**CURTIS REFRIGERATING MACHINE CO.**  
Division of Curtis Manufacturing Co.  
1912 KIENLEN AVE. ST. LOUIS, MO.



### Package Unit



Package unit designed by Electro Devices for a portable beer wagon. The hermetically sealed compressor is on the top, the condenser and liquid receiver below. The condenser fan is on the end of the compressor.

### Boston Firm Markets Small Hermetic Unit For Commercial Jobs

BOSTON—Electro Devices Co. here is introducing a hermetically sealed refrigerating machine for small commercial applications such as beverage coolers, water coolers, small ice cream cabinets, etc.

Whitfield W. Johnson is president of the company, and William D. Drysdale is general manager and chief engineer.

Called by its makers the "Midget Ice Machine," the unit is made in 1/2-hp., 3/4-hp., and 1-hp. sizes.

Compressor is a single-cylinder, reciprocating type, with a 1-inch bore and 3/4-inch stroke. It operates at a speed of 1,750 r.p.m. The compressor and motor housing is a deep-drawn stamping, claimed to be leak-proof.

A starting device, connected to a crank pin, is used, and the piston does not move until the motor is near top speed. With this device the motor starts without any load and thus the use of a split-phase motor to drive compressor is possible.

Compactness is the feature of the unit's design. Maximum height of the unit is 6 1/4 inches, and the outside diameter of the compressor is 5 and 11/16 inches. A portable water cooler which Electro Devices offers, with its unit to furnish the necessary refrigeration, weighs 62 lbs., and the cabinet dimensions are 15 x 14 1/2 x 14 1/2 inches.

The Electro Devices low-tempera-

ture ice cream cabinet unit complete with circular-fin coils manufactured by Rome-Turney Mfg. Co., which is being used in the "Cold-Ray" cabinet manufactured by William Coburn, Inc., weighs 45 lbs.

Capacities claimed for the various units, using methyl chloride as the refrigerant and with a back pressure at 7 lbs. and a condensing temperature of 86° F., is as follows:

1/2-hp. unit: 50 lbs. ice-melting effect per 24 hours; 3/4-hp. unit: 83 lbs. ice-melting effect per 24 hours; 1-hp. unit: 108 lbs. ice-melting effect per 24 hours.

### Two Large Machines Cool Storage Plant

GARDNERS, Pa.—Two Frick ammonia compressors, one a 6 by 6, the other a 7 by 7, carry the entire cooling load of the new cold storage plant of C. H. Musselman Co., fruit merchants here.

Through the use of 15,000 feet of two-inch direct expansion ammonia pipe coils, the refrigerating system maintains a temperature of 30° F. in the two storage rooms.

Combined capacity of the storerooms each of which is 128 feet long, 100 feet wide, and 12 feet high, is 125,000 bushel crates of fruit.

High side of the refrigerating system is completed by a 30-in. by 10-ft. vertical shell-and-tube condenser, to which water of 60° is supplied at a rate of 300 g.p.m., and a 20-in. by 16-ft. receiver.

Condensing water flows from a cooling tower mounted on the roof of the building 60 feet above the machine room floor. It is recirculated by one of two centrifugal pumps, each driven by a 7 1/2-hp. motor.

Similar to the Musselman storage and processing plants in nearby Biglerville and Flora Dale, the Gardners building is a two-story structure of concrete blocks with a single-story addition in front housing the sorting and packing room and the compressor room.

The main part of the establishment, containing the two storerooms built one above the other, is completely insulated with two-inch corkboard. It is 160 feet long and 100 feet wide.

Tests conducted immediately after the building had been checked for leaks proved that the storage rooms could be cooled from 70° to 29° in 30 hours.

Several weeks later a two-hour failure of the supply and make-up water and a stiff breeze reduced the quantity of condensing water by between 30% and 40%. Due to adequate condenser area, however, the head pressure did not rise above 160 pounds.

### Servers Installs Lipman Units In Detroit Restaurants

DETROIT — Servers Restaurant Equipment Co., 603 Gratiot, Detroit agent for Lipman commercial refrigeration and air-conditioning equipment, has installed a refrigerating system including six frost plates in the cafeteria managed by John W. Davis in Kern's Department Store.

A single frost plate and a reach-in refrigerator operated by 1 1/2-hp. Lipman compressor were installed in "Steve's Lunch," 2705 Woodward op-

posite Hotel Detroit. The plate is in the front window, and the box in the kitchen.

Servers is also installing an air-conditioning system in "Al's Steak Hamburger," nearing completion at 8300 Livernois. A similar installation placed last year in the original "Al's Steak Hamburger" on Oakwood Blvd. at the corner of Schaefer Highway, near Ford's River Rouge factory, boosted summer business.

Installed next to the air-conditioning unit is a 2-hp. Lipman compressor connected to the large refrigerator in the kitchen.

### Handbook on Water Systems Issued by Edison Institute

NEW YORK CITY—"Where Water Runs, Dollars Flow," a 28-page dealer handbook, has recently been published by the Electric Water Systems Council of the Edison Electric Institute and the National Association of Electric Water Systems Manufacturers.

Besides analyzing the market for electric water systems, the handbook suggests methods of cashing in on this market. Specifications for every type of house and farm electric water service are included.

## BRUNNER ENGINEERING HAS ADDED SAFETY IN THREE IMPORTANT WAYS



MODEL A-50  
1/2 H. P. AIR COOLED  
Condensing Unit

Maybe you never thought of the safety angle in connection with refrigerating and air conditioning equipment. But Brunner engineering saw to it long ago that structural precautions were taken to eliminate all possible hazards... Each receiver is fitted with a carefully designed fusible plug to insure safety in operation... Two line valves, holding all gas in the receiver when desired, insure safety in shipment... Neat guards for belt, fly wheel and fan, insure against physical injury. These safety essentials, found on every Brunner unit, have contributed in an important way toward Brunner's time-tested reputation for dependability... Better get acquainted today with a full roster of Brunner features! Forty-seven condensing units and five compressor models for nearly all refrigerating and air conditioning installations. Brunner Manufacturing Company, Utica, N. Y., U. S. A.

# BRUNNER

BUILDS FOR *Greater* DEPENDABILITY



### HILL REFRIGERATORS ARE EASIER TO SELL

THE new Hill line of improved Reach-in Refrigerators for restaurants, hotels, institutions, hospitals and bakeries is easier to sell because better made—and noticeably so. The low conductivity corkboard insulation is thicker, the interior and exterior are genuine porcelain, the hardware is of special design, the coils are more easily reached, the proportions are more graceful, and the refrigeration is better.

Send for 32-page illustrated catalog, describing outstanding HILL features and listing complete specifications.

Hill Products Division  
C. V. HILL & CO., Inc., TRENTON, N. J.



## SUCCESSFUL SALES IDEAS

### Long-Established Furniture Firm Makes 400 Sales in Year by Telephone & Direct Mail

By W. H. Long

ELIZABETH, N. J.—How a 58-year-old furniture house can sell 400 electric refrigerators a year without an outside selling organization and make 90% of those sales through telephoning and using direct mail to its store accounts is related by James E. Murray, refrigeration sales manager for McManus Bros. here.

One apparent reason why McManus Bros.' refrigeration department has done so well with its Frigidaire and Crosley lines is the attractiveness of its large and smartly appointed major appliances showroom located at the rear of the store. This department covers a floor space 80 ft. by 125 ft., about half of which is devoted to refrigeration displays and the remainder to lines of ranges, washers, radios, and ironers.

#### ATMOSPHERE

Mr. Murray and his three salesmen believe that atmosphere plays a major part in making any sale. Taking advantage of their showroom's spacious floor, refrigeration displays have been ranged along one lengthwise wall with plenty of room between boxes, and others have been placed on small rostrums and in separate locations between range and radio displays.

By use of purple velvet backdrops, indirect lighting, numerous comfortable chairs placed at advantageous points before the line-ups, and potted palms, a remarkably "homey" and restful atmosphere has been created in the McManus store.

Boxes are grouped according to related sizes—small, medium, and large—so that customers may view refrigerators in size brackets in which they are primarily interested, and use of large cardboard "eye-catching" floor promotion pieces has been restrained.

#### INSIDE SELLING ONLY

"We maintain no outside sales crew and do our selling entirely inside the store," said Mr. Murray in explaining his sales practices. "The great majority of our sales are made among our own budget accounts, and as far as time payment sales are concerned we know those accounts are good in refrigerator merchandising."

"Early in the selling season—generally in February—we start to circularize all our active accounts, past and present, by direct mail. This store

has been in the furniture business here in Elizabeth for 58 years, so you can see that we're well established and know our customers. Then we continue to circularize them throughout the season at intervals, interspersing the direct mail with phone calls."

#### TELEPHONE SELLING

And here Mr. Murray revealed the fact that he and his three salesmen frequently make as many as 200 telephone calls a week to McManus Bros. customers.

"There's a sound explanation for that, too," the sales manager continued. "First of all, my three associates have lived in Elizabeth a long time. They're all veterans of refrigeration selling, and they know the people they're calling in most instances."

"I have been here 16 years, and before we sold refrigeration I was selling furniture to Elizabeth families. F. B. Mullen, my assistant, has been with us seven years, Hal W. Zimmerman has been here 10 years, and Frank Knudsen, our technical adviser on refrigeration service, has been associated with the company five years."

#### OLD CUSTOMERS

"When any of us call up Mrs. Smith or Mrs. Jones, we're not generally making a 'cold' phone call," Mr. Murray continued. "Most of the time, we know the prospect personally through previous dealings with the furniture department. And he or she is glad to discuss refrigeration needs with us."

"We keep a careful file of prospect cards, and know exactly what sort of box the prospect has, what size the family should be interested in, and when our last call was made."

Mr. Murray went on to say that McManus Bros. doesn't find the customer-to-prospect lead idea a fruitful one in selling refrigeration.

"We try to call our shots within the selling season in relation to particular needs for people we know and have done business with," he added. "McManus Bros. wants only a definite amount of business out of our department, and we want no thin-edge sales. We haven't a 5% or 10% leeway in selling as most dealers do."

To Mr. Knudsen, the company's service adviser, Mr. Murray gives

much credit for the firm's large volume of refrigeration business. Although Frigidaire has its own state service department set up in each New Jersey county, and Crosley handles its servicing through distributors in the state, the McManus firm adds the guarantee of its own service department and finds it efficient in producing sales and good will.

The company's direct mail campaign promotion is largely written by its refrigeration sales department, playing up local angles and refrigeration problems to the type of customer with which it deals.

During the first week in May each year, the Elizabeth "Daily Journal," only newspaper in the city, holds it "Journal Cooking School" at the Elks Club. At this show, which is attended by many thousands each year, McManus Bros. maintains a demonstration unit. Several sales are made annually as a result of it, according to Mr. Murray, and many new prospect leads are obtained.

#### FLOOR TRAFFIC FOLLOWUP

F. B. Mullen, assistant sales manager, made the point that it was the policy of McManus Bros. to telephone each walk-in prospect before night on the day which the prospect visited the store. By tactful handling, said Mr. Mullen, a desire to buy could frequently be induced by further discussion of the prospect's needs, keeping an antipathy of such a close follow-up out of the prospect's mind entirely.

Despite the fact that McManus Bros. maintains only the Elizabeth store, selling mainly in Union county, refrigeration sales are made in as distant towns as Cape May, at the southern tip of New Jersey. Mr. Murray attributes this to the store's wide reputation in the furniture business.

He also stated, in discussing customer accounts and sales, that his men often find customers of middle age who bought their wedding furniture from the firm, know its reputation, and are ready to talk refrigeration because they know with whom they are dealing.

#### SELLING LOW INCOMES

Where formerly McManus Bros. sold mainly to people in the upper-income brackets, Mr. Murray and his salesmen are turning their attention now principally to the \$1,500-a-year group.

Telephone calls have revealed that eight out of 10 homes of the wealthier sort have mechanical refrigeration, while only six out of 10 in the moderate income group have it. Hence,

the lower income brackets are more productive of sales, he feels.

The company follows a policy of no down payments on appliance sales up to \$200 in value, including refrigerators. Payments begin 30 days from date of installation, and are allowed to run for as high as 30 months, but most accounts are closed out by 20 to 24 months, Mr. Murray said.

### Old Piano Dealer Finds Profit in Refrigeration

"We were reluctant to enter refrigeration selling when we first took on a line several years ago, but now we find most piano dealers merchandising refrigerators too, and for ourselves we find the business a very profitable one in connection with our primary interest—pianos."

The speaker was Otto Altenburg, manager of the Altenburg Piano Co., located next door to McManus Bros. on East Jersey St., which handles Gibson, Kelvinator, Norge, and Westinghouse.

Gray-haired Mr. Altenburg, who bears a striking resemblance to Giovanni Martinelli, Metropolitan Opera artist, told us that his family had been in the piano business for 97 years in this country since coming from Germany. The firm operates one of New York's largest piano stores at 57 Fifth Avenue, but sells refrigeration only in the Elizabeth store.

#### SEPARATE BUSINESS

"Very often piano sales lead to refrigerator sales," said Mr. Altenburg, "but we make no attempt to connect the two as far as obtaining leads is concerned. Of course, cus-

tomers coming into the store to make payments on their pianos frequently stop to inspect our refrigerator display and many times this leads to a sale, but we never approach them on the other product after making a sale of one."

Altenburg's employs seven outside salesmen who are engaged in selling both lines. Straight canvassing methods are used primarily, with a follow-up man making the second approach after another salesman has established the initial contact.

One of Mr. Altenburg's pet sales methods is to have his salesmen approach only those customers they have previously sold or with whom they have personal acquaintance. In this way, the store's manager believes, the salesman has a personal understanding of the family's tastes and refrigeration needs, and there is a better chance of making a sale than there would be if a "cold" call were made.

Most of the store's refrigeration sales are made to customers in the higher income brackets, said Mr. Altenburg, and it is his policy to require more strict terms on credit sales. Altenburg's requires a 10% down payment with maximum terms set at 18 months. Very few repossessions have had to be made under this system.

### Goerke Uses Accounts As Prospect List

Despite the fact that most Elizabeth outlets report a falling-off in refrigerator sales after April 1 this spring, department store business in the city appears to be booming.

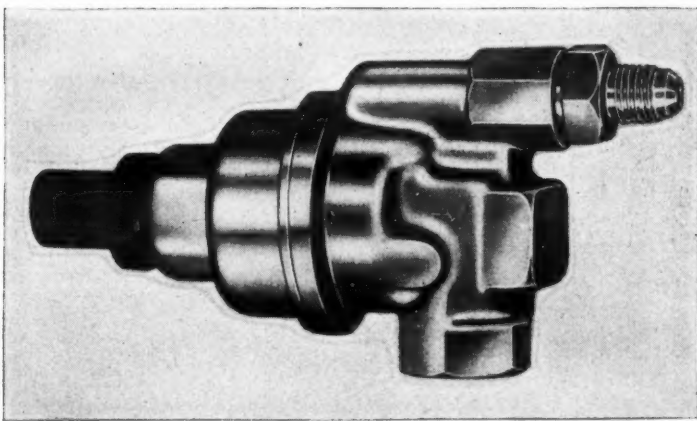
At R. J. Goerke Co., which handles

(Concluded on Page 9, Column 1)

## STANDARD REFRIGERATING APPLIANCES

### New and Exclusive FEATURES

THAT ASSURE FINER PERFORMANCE ARE ENGINEERED INTO THESE—



TYPE "A"

### AUTOMATIC EXPANSION VALVES

Among the outstanding features of these valves are forged bodies—live rubber, easily removable breather caps—removable needles and seats. These valves are rugged, dependable, highly efficient and interchangeable with all refrigerants. The added features contribute greatly to a new standard of valve performance. Frankly, no finer valve has ever been offered to the industry, nor can they be out-performed in any comparable service.

Write for bulletins on the complete line of Blue Ribbon appliances

AMERICAN INJECTOR COMPANY  
RILEY ENGINEERING CORP. Associate  
1481 14TH ST. • Phone: LAFAYETTE 0350-0552 • DETROIT, MICH.

## INSTANT APPROVAL

—for these modern refrigerator doors!

Dealers are enthusiastic over new "LOXIT" advantages. These complete Ace Hard Rubber Assembly Units—

#### Doors—Rails—Jams—

for modern refrigerated display cabinets, now offer exclusive engineering and utility features at no increase in cost:—locked-in, lift-out doors—tightly closed overlap—reduced air leakage—lighter weight—greater strength—roller bearings—shock absorbing—quiet closure.

Complete range in sizes for all Display Cabinet types

Storage and Service doors, glazing strips, trim, etc. Manufacturers: write for complete details and prices to American Hard Rubber Co., 11 Mercer St., New York, N.Y., 111 West Washington St., Chicago, Ill., Akron, Ohio.

**ACE** "LOXIT" PATENTED DOORS

Specify  
**ANSUL**  
REFRIGERANTS

high Quality.....  
better Performance

Complete refrigeration satisfaction depends to a large degree upon the quality and performance of the refrigerants used. If you will specify ANSUL SULPHUR DIOXIDE and ANSUL METHYL CHLORIDE your satisfaction is guaranteed. Every cylinder is given an individual analysis to make certain that the contents are perfect for refrigeration purposes. Write today for complete specifications, prices and the location of the warehouse nearest you.

**ANSUL**  
CHEMICAL COMPANY  
MARINETTE • WISCONSIN



## Displays That 'Stop' Crowds & Liberal Terms Prime Sales Aids for New Jersey Dealers

(Concluded from Page 8, Column 5)  
G-E and Crosley, Appliance Sales Manager H. H. Selvig declared his department had sold more refrigerators during the second week in April than at any previous time in the store's history.

### PROSPECT LIST

This large department store has about 30,000 store accounts which its six salesmen use as a basis for their outside canvassing, according to Mr. Selvig, and it is to those accounts that the refrigeration department directs most of its sales attention. Floor traffic provides the rest.

Sales Manager Selvig and his assistant, T. R. Borden, have used "crowd-catching" window displays with marked success in bringing prospects into the store.

Latest of these was the display of a G-E Monitor Top in a Broad St. show window during the first week in April in which Harry Levy, a professional performer variously known as "The Mechanical Man" and "The Automaton," impersonated a mechanical chef. The G-E Monitor Top unit was enclosed in glass, and "The Mechanical Man" pointed out each of its features in operation while acting the part of a robot.

Crowds attracted by the display stopped Broad St. traffic, said Mr. Selvig, and brought so many prospects and customers into the store that the firm was able to accomplish its biggest sales period in history during the following week.

### SALES RESISTANCE

Major sales resistance in the Elizabeth area is found among the large, foreign-born population which works in the numerous oil-refining plants surrounding the city, said Mr. Selvig. He claims that his salesmen "really have to sweat" to sell a refrigerator to a prospect whose reading knowledge of English is practically nil and who can comprehend only the simplest sales talk.

The Goerke store has followed a plan of tie-ups between refrigerator and washer sales in building both appliance sales marks to new highs this year. Mr. Selvig and his assistants find Elizabeth housewives more interested in refrigerators and washers than in any other pair of electric appliances.

Goerke's requires no down payment on its refrigerator sales, allowing the customer to begin his payments 30 days after installation with three years to complete them. Despite the liberal terms offered, the store has yet to make its first repossession, the manager said.

### Thonet Believes in Handling Single Line

At Levy Bros. department store, handling Frigidaire exclusively, George N. Thonet, appliance sales manager, reported spring business 100% ahead of 1936 sales during the same period. As did Mr. Selvig, Mr. Thonet declared business during the week of April 5-10 to be the best in Levy Bros. history.

"I believe that the best way to overcome sales resistance these days is for a store to handle one line of refrigeration exclusively and to push it to the limit," said Mr. Thonet.

"Some dealers believe in the system of drawing customers' attention from one box to another of a different line until a sale is made, but it leads to too much distraction. My idea is that more sales are lost this way than any other."

### NOT ALL 'TOPS'

"Let's look at it from another angle," the Levy manager continued. "If a woman comes into a store where three or four lines are sold, she goes from box to box with a

salesman tagging along trying to boost each one. What does she think? Naturally, that all he wants to do is to make a sale. They can't all be world-beaters, and customers are quick to sense it.

### CONFUSING THE PROSPECT

"Besides, it is difficult for a salesman to present a good sales story about every box in a three or four-line store. It means stacking feature against feature, line against line, and gadget against gadget. The prospect is confused. Most of them know what they want to buy. That's why we handle one line exclusively, and if we can't sell that, it's our tough luck."

Mr. Thonet stated that his firm offers the lowest finance charge of any department store in New Jersey—5% on all time-payment sales. The store handles all its own paper, and has had only one repossession during the past eight months. That was caused by the death of a customer's husband, and the Levy Bros. store took the box back to aid her in liquidating his estate.

Down payments are secured more easily this year than during any previous spring selling season, according to Mr. Thonet. He finds most of his sales being made to people in the income bracket earning above \$30 per week. The Frigidaire line and a line of washers are the only electrical appliances handled by the store.

## New England Sales Up 55% in First Quarter

BOSTON—A 55% increase in electric refrigeration sales for the six New England states during the first quarter of 1937, as compared with the same period for 1936, is indicated by the index recently issued by the New England Council.

Cotton consumption and spindle activity rated next highest increases over last year's first quarter with 34.5% and 34.2%, respectively.

Also shown by the index were that, during the first three months of 1937, general business activity in New England reached its highest peak since 1929, and industry was the briskest in the history of the index, which dates back to 1920.

### Fairbanks-Morse to Show 1938 Radio Line May 21

INDIANAPOLIS — Fairbanks-Morse's 1938 line of radios will be shown to distributors and to their representatives at a two-day sales convention May 21 and 22 in the Columbia Club, announces Parker H. Erickson, radio sales manager for Fairbanks-Morse.

### Vacuum Cleaner Sales Total 200,414 Units in March

CLEVELAND — Sales of vacuum cleaners for the month of March totaled 200,414 units, according to E. Murray, of the secretary's office of Vacuum Cleaners Manufacturers Association. Floor cleaner sales during the month were 148,113 units, and hand cleaner sales, 52,301 units.

## G-E Erecting 6-Story Los Angeles Building

LOS ANGELES—Contracts for a new \$700,000 General Electric building of reinforced concrete, with 250,000 sq. ft. of floor space, to occupy approximately a city block in the downtown industrial section of this city, were to have been awarded recently, it is reported.

Design includes six stories and a basement, three stories of which, according to plan, will be ready for occupancy by September. G-E Realty Corp. will supervise construction.

To be housed in the building are a warehouse and the offices and display rooms of General Electric Co., G-E Supply Corp., G-E Contracts Corp., and G-E Merchandise Department. Heat is to be furnished by electricity.

Associated with the project are: Albert C. Martin, architect; Paul Jeffers, structural engineer; and Lee Ellingwood, electrical and mechanical engineer. All are of Los Angeles.

## Cleveland Project Using 25 Electric Kitchens

CLEVELAND — Twenty-five all-electric kitchens have been ordered from General Electric Supply Corp. here by Metropolitan Homes, Inc., for installation in new residences to be constructed as part of a building program promoted by Cleveland's Electric League.

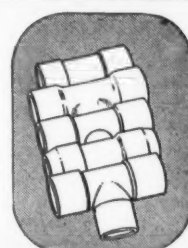
Refrigerators, ranges, dishwashers, and Disposals are included in the order. Winter air-conditioning provisions also have been made.

Three of the new homes, with six to seven rooms each and with prices ranging for \$9,500 to \$10,000, are already going up. The building program is part of a plan to develop a new residential district in Cleveland Heights.

Principals in the all-electric kitchen deal were: Aaron Kosser of Cleveland's G-E Supply Corp.; George Kobick, apartment house division manager of the corporation; and Rocco Puzitiello, the builder.

## WOLVERINE COPPER TUBING

GET IT AT YOUR JOBBERS



FITS  
ANY  
STANDARD  
FITTING

**WOLVERINE TUBE COMPANY**  
1411 Central Avenue • Detroit, Michigan



## Spot Lighting

### DEALERS WHO OFFER THE COMMERCIAL CREDIT COMPANY PLAN

**INCREASE YOUR SALES** and assure yourself maximum profit on all time-payment transactions by standardizing on Commercial Credit Company financing.

Millions of families are in the market this year for refrigerators, automatic heating equipment, radios and electric household appliances. Most of these families buy on time. There will be no hitch in selling them if you offer them the Commercial Credit Company plan. They know the national reputation of this twenty-five year old company for integrity, consideration and low cost. More than 31,000,000 copies of full page, four color advertisements in national magazines this spring are spot lighting dealers who offer Commercial Credit Company financing.

Our perfected investigation methods weed out the questionable credit risks. Our great resources permit us to finance you up to the limit of your selling capacity. Our service through 180 local offices is pledged to give responsible dealers close co-operation at all times, under all circumstances. Write for complete information.

## COMMERCIAL CREDIT COMPANY

COMMERCIAL BANKERS BALTIMORE

SERVING MANUFACTURERS, DISTRIBUTORS AND DEALERS THROUGH 180 OFFICES IN THE UNITED STATES AND CANADA

### TRAINED MEN Furnished FREE!

Save time, trouble and money when you need men. Use the U.E.I. Free Placement Bureau. No charge to you or prospective employee. It is our contribution to the industry.

We have U.E.I. trained men available in all parts of the country. For 10 years our graduates have made good as shop mechanics, and as installation and service men in leading organizations. Next time you need a competent man, phone, write, or wire the U.E.I. Free Placement Bureau.

**UTILITIES ENGINEERING INSTITUTE**  
404 N. Wells St. Established 1927  
Chicago, Illinois 17 West 60th St.  
New York, N.Y.





# Around the World With George F. Taubeneck

Personalities, products, and pictures of English refrigeration manufacturing and selling organizations are presented in this, one of the closing instalments of the editor's World Series.

Based upon his seven months' trip around the world in 1936, this series has appeared weekly in the NEWS for more than a year, giving readers a thoroughgoing survey of men and markets in 33 different nations of the world.

## Developed Slowly

Demand in England for air-conditioning and ventilating equipment has developed more slowly than in the United States, according to U.S. Consul General Dudley G. Dwyre, and thus far has been chiefly supplied by British manufacturers.

Tariffs, as well as competition, hinder the import of foreign equipment here. Ventilating and air-conditioning apparatus is not specifically provided for in the British tariff, and so no definite statement may be made as to what rate of duty applies in each specific case, says Mr. Dwyre, but it generally runs from 20 to 33 1/4% ad valorem.

It should be noted that, for customs purposes, the value of any imported goods is taken to be the price they would bring on sale in the open market in the United Kingdom at the time of importation, as fixed by the Commissioners of Customs and Excise.

While this value includes freight, insurance, commission and all other incidental charges and expenses, it should be understood that it may be fixed by the Customs at a figure higher than the c.i.f. invoice price, Mr. Dwyre points out.

Market possibilities for ventilating and air-conditioning equipment are aided materially by the fact that municipal authorities in this country have powers to require the installation by factories of equipment dealing with smoke or fumes, when these are regarded as a threat to public health. In some trades the law requires installation of fume and dust-removing apparatus in every plant.

Among principal purchasers of air-filtration equipment in the United Kingdom, Mr. Dwyre states, are underground railways, fire stations, large hotels, theaters, hospitals, and various factories.

## York Shipley

One of the grandest gentlemen I met on the entire trip was J. B. Farish, managing director of York Shipley Ltd. and a brother globetrotter. His jaunt around the earth was a honeymoon cruise—and with a lovely lady.

He is a rotund, kindly man who has lived well, seen much, and laughed often. He's so agreeable that his business competitors don't seem to notice how much business he gets.

Every competitor seems to have a good word for him, which is rare in

Europe—rare anywhere, if the man is (like Farish) getting a big share of the business, and getting it by going after it.

Farish started the York Shipley business in London in 1920, after marrying and taking his long honeymoon. He previously lived in the Argentine for five years, and has

Since the article on this page was written, J. Bernard Farish, managing director of York Shipley, Ltd., London, England, and a leading figure in the refrigeration and air-conditioning industry for 30 years, died in London March 24 at the age of 57.

A Nova Scotian by birth, and an outstanding example of the combination of trained engineer and business man, he was one of the leading lieutenants of the Shipley brothers, pioneers in refrigeration and air conditioning.

Mr. Farish first entered the York organization in 1910 when he joined the Agar Cross Co., Ltd., York representatives in Buenos Aires, Argentina.

Previously, he had been manager of the American Linde Refrigerating Co. and had equipped the large banking offices of Kuhn-Loeb in New York with comfort refrigeration, one of the earliest air-conditioning installations in this country.

Returning to New York early in 1917, Mr. Farish was retained as consulting engineer for the firm of Frank S. Martin and Son, naval architects, commissioned by the Italian government to convert two cargo steamers into meat carriers for war purposes.

Later the same year, he became represented York in many countries.

Mrs. Farish, a charming, vivacious, and very pretty lady, has been presented at Court; and is, socially, a great help to her husband's business. I went to a roof-garden party she gave, and found it elegant, indeed.

Farish took me on a Grand Tour of installations made by his firm. They seem to be everywhere. And they are big jobs—hotels, stores, ice cream plants. York Shipley made a

dozen big air-conditioning installations in the year preceding our visit.

In an ice cream plant, which had a big battery of 250 and 175-ton compressors installed by Farish's company, the magnetic field created by the big dynamos put the exposure meter of my camera on the blink.

He also carted me around to many of the major sights of London, including the rained-out end of a royal

affiliated with the export and marine department of the Shipley Construction and Supply Co., of Brooklyn, N. Y.

As foreign manager for York in 1918, Mr. Farish gained wide experience in the refrigeration market all over the world. In this capacity he made trips to various foreign countries, visiting and establishing foreign representatives for York.

In 1920 he established York Shipley, Ltd., London, becoming managing director, a position he held at the time of his death. Calm and unobtrusive, quietly genial and always considerate in his dealings, he quickly made a host of friends in the English refrigeration industry, which might naturally be expected to have resented the presence of a strong American competitor.

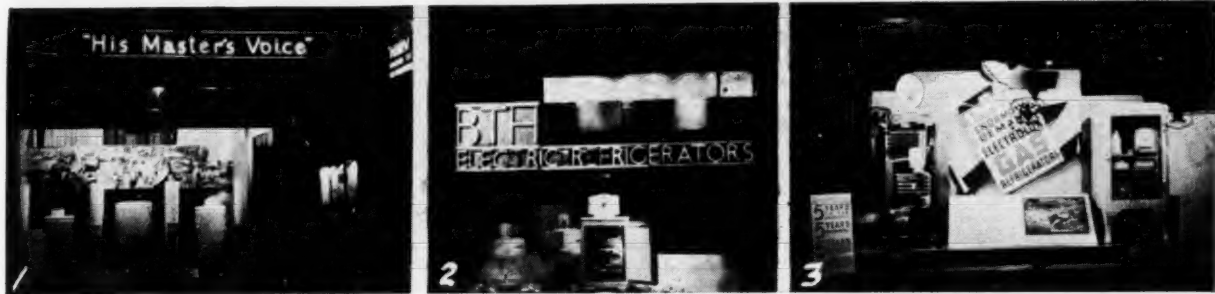
A member of the British Association of Refrigeration, he attended the International Congresses in London, 1924, Rome, 1928, and The Hague, 1936. He was one of the nominees for the annual B.A.R. Council election in February, and was elected a member of the executive council the day before he died.

Mr. Farish is survived by his wife, the former Edith Chipman of Yarmouth, Nova Scotia, and two sons, all living in London; and one brother and one sister, in the United States.

garden party at Buckingham Palace. Also I saw my first dog-racing track in his company. In the upper part of the stands was a glassed-in restaurant air conditioned by York Shipley.

York Shipley, the latter being the name of York's American president, is a fortunate name for a "Yankee" concern to have in England. They are both names of well-known English spots and families, and the Buy-Britishers assume it is a native firm.

## Window Displays Brighten London's Night



The Great White Ways of New York and Chicago are no brighter than London's Piccadilly Circus and the elite shopping streets which fan out from that focal point. Here are three refrigerator window displays photographed in that district. (1) Norge (called "His Master's Voice" in England); (2) General Electric (called "BTH"); and (3) Electrolux. The latter display features an unlimited five-year guarantee.

York Shipley pays 20% duty levied on imported equipment, and assembles the units in England. Because of the tariff, prices on the assembled units are comparatively high. The company does a good business with the cooperatives, which have been in existence in England for half a century, and are very strong.

## Frigidaire, Ltd.

Frigidaire imports complete household units to distribute in England, and builds some domestic cabinets and reciprocating compressors of 1/2, 3/4, and 1 hp.

Commercial cabinets are built to specifications in the London factory. Service is provided through branches and dealers, branch offices being established in Birmingham, Brighton, Canterbury, and London. Sales manager of the London branch is Geoffrey Worsam, with whom I had the pleasure of a long conversation.

Also I met A. J. R. Bridges, senior director, J. Sanford, in charge of the contract business, W. B. Daniels, sales manager, E. J. Batchelor, advertising manager, C. F. Dickson, managing director, John Linebaugh, chief engineer, and R. H. Barney, production manager. The last two named are Americans; all the others are Englishmen.

The entire group assembled with me at lunch one afternoon, and I was treated to a five-way argument—friendly and good-natured, to be sure—that was highly enlightening.

Later Mr. Linebaugh took Mr. Barney and me out to his home, where we were fed with an old-fashioned American hamburger dinner.

At the time of my visit, the production rate at the factory was 60 units per day, and I was told that in 1937 this rate would be stepped up to 120 per day.

Frigidaire's dealers are old (in point of service) electrical contractors who have been with the firm on an average of eight or nine years. Turnover in dealers is slow and slight. One reason for the loyalty to the company is that the dealers get a chance to hold a "gabfest" once a month at the factory.

"A" dealers have sub-distributors handling household sales, mostly in department stores, wholesale houses, and through contractors.

Frigidaire capitalizes on its long-existent good will built up with numerous shopkeepers. You have no doubt heard the remark that "England

is a nation of shopkeepers," and surmising this to be true you can realize that Frigidaire's good standing with them is highly profitable.

Like Kelvinator and some of the other companies, Frigidaire has found that salesmen who canvass for prospects are, to put it mildly, "not very welcome."

Frigidaire deals directly only with the "A" dealers, and works on a sliding scale of discounts according to their billing. Salesmen devote their energies to selling refrigerators during the spring and summer, and radios in the fall, or autumn, and winter.

Almost all salesmen are salaried, the objection to the commission being that it leads to price-cutting and cut-throat competition.

Commercial sales are handled through the "A" dealers, who employ retail selling staffs working on salaries and, in few cases, commissions.

Many of these salesmen are working part-time to boost their incomes. They have small, independent incomes, perhaps from pensions or inheritances, and, being well-educated and cultured, they take to selling refrigerators and other appliances during four or five months of the year as a pleasant and dignified means of adding a little more on their bank accounts.

Frigidaire makes it a point to recruit these men from the retired lists of the army and navy particularly. The company objects to turnover in its staff, and is striving for quality in its men, not quantity.

## Kelvinator Ltd.

Ralph Searle, managing director of Kelvinator Ltd., claims that although until recently the demand for commercial electric refrigerators has far surpassed that for domestic boxes in England, he thinks that from now on domestic sales are going to "give the commercial side of the business a run for its money."

During 1936 the electric supply companies (British utilities) played an important role in popularizing the electric refrigerator as a household necessity, according to Mr. Searle.

In an effort to increase electric current consumption, the utilities offered a 3-cu. ft. domestic refrigerator on a five years' sale plan with payment as low as 2/6 per week (about 62 1/2 cents in U. S. currency).

So great was the demand for these boxes among the lower income groups, Mr. Searle declares, that Kelvinator

(Concluded on Page 12, Column 1)

## Prominent Figures in London's Refrigeration and Air-Conditioning Fraternity



(1) D. M. Gruby of Refrigeration Appliances, Ltd., looks over a new blower unit manufactured by his concern. (2) J. M. Farish, managing director of York-Shipley, Ltd., is proud of this piece of York equipment. (3) Vents in London's first complete apartment house air-conditioning system—installed by York. (4) Two Lightfoot cabinets with Westinghouse units. (5) J. B. Raymond, editor of London's Cold Storage and Produce Review, was host to the editor on a holiday in Brighton, English seaside resort.



## SPECIALTY SELLING PLANS

### Good 'Eats', Free Handkerchiefs, and Highest-Bidder Sales Mark Topeka Norge Dealer's Jubilee Week

TOPEKA, Kan.—Good things to eat, free handkerchiefs, a highest-bidder sale of five major appliances, and a prize-letter contest were among the features of the recent week-long jubilee sale held by Ackerman-Brock, Norge dealer, to celebrate the remodeling of its salesroom.

Refrigerator and range demonstrations included the serving to prospects of frozen desserts, peanut butter and orange cookies, and even an angel-food cake baked by one of the company's salesmen. Recipe folders were given away.

Incidentally, a potted geranium was kept in position on the oven of a range continually kept hot for demonstration purposes, in order to show how well the oven was insulated. The flower remained unwithed.

To draw interest to the laundry equipment, 500 white and fast-color handkerchiefs were purchased and a few dozen at a time put into a washing machine with clear, cool water. Then the current was turned on and the gay bits of color set swirling.

Prospects were invited to fish out a handkerchief with the stick provided, put the bit of cloth through the wringer, run it through the flat ironer, and take it home for a souvenir.

Four Norge appliances—refrigerator, range, washer, and ironer, a Delco radio, and a Royal cleaner, retail prices of which totaled \$757, were lined up and sold at the end of the week to the highest bidders.

To build up a "hot" prospect list, each bidder was required to list the make and age of each appliance already used in his or her home. The bids then were dropped into a sealed box, and from them salesmen were able to get helpful information regarding visitors' appliance needs.

People were brought to the store by a prize-letter contest on "What I Like About Ackerman-Brock's Store." The contest was announced over the air and a Mixmaster retailing at \$22.50 was given to the winner.

To start sales, a 47-piece dinner set was given free with each of the first 25 major appliances sold.

Slogans were used to emphasize the selling points of various appliances as follows:

On the washer was a card saying, "I am worth \$89.50. No more 'blue Mondays' with me around!"

The sweeper promised, "I will make your housecleaning easy!"

"Let me help protect your health!" said the refrigerator.

The ironer advised, "You sit down while I iron!"

Daily broadcasts telling of the display and the new salesroom and giving the public an invitation to visit the store and take part in contests were made by "Nora Norgette," homemaker demonstrator, who also served as hostess in the new salesroom.

John W. Brock and Duane S. Ackerman are co-partners in the company.

### General Electric Holds Meetings on Extension Of Farm Refrigeration

DALLAS—Extension of the use of electric refrigeration in farms will be one of the subjects considered at the southwestern regional farm conference, to be held in the Adolphus hotel here May 3 and 4, under the auspices of the General Electric Co.

Both household and commercial types of electric refrigeration are to be discussed. Value of refrigerators in farm kitchens will be stressed in the talk on "The Big Four in the Farm Kitchen," scheduled for Monday afternoon, May 3. Milk cooling and farm cold storage are to be taken up during the session of May 4.

Main purpose of the conference is to make the use of electrical household appliances more general in American rural life by training the attending delegates to be able to explain and demonstrate to the farm families the advantages of such equipment.

General subjects to be discussed, in addition to refrigeration, are lighting and wiring, water pumping, soil heating and sterilizing, irrigation, other electrical appliances, etc.

More than 150 delegates are expected to attend the conference, most of them representing organizations in Texas and neighboring states.

### Utility Question Program Promotes Appliances

FAIRMONT, W. Va.—"What's the Answer," a question-and-answer program sponsored by Monongahela West Penn Public Service Co., is being broadcast every week day over radio station WMMN, Fairmont and Clarksburg, for the benefit of electrical dealers.

Sponsors of the program, which bears marked similarity to Kelvinator's nationally-broadcast "Prof. Quiz" program, are soliciting questions from listeners.

During the past eight weeks, nearly 200 such questions have been used. Persons submitting them were awarded certificates worth \$1 in cash if presented at the office of the utility's advertising department, or \$2 in credit on any electric appliance if presented to an electrical dealer.

### New Westinghouse Folder Outlines Sales Campaign

MANSFIELD—Titled "Hit While It's Hot," a portfolio outlining a complete sales campaign using Westinghouse 1937 sales promotion material has just been released to dealers by Westinghouse Electric & Mfg. Co.

The plan of action suggested in the sales literature capitalizes on the "Hell's Kitchen" promotion, the Westinghouse "kitchen-proved" theme, and the use of the "Family Album."

Dealers are advised to use the "Hell's Kitchen" display to attract prospects to the store, to "face them with facts" found in the "Family Album," and then clinch the order with the story of the Government order placed with Westinghouse.

### Letter to Prospect's Dog Makes Sale

SANDUSKY, Ohio—By the unique experiment of addressing a letter to his prospect's dog, "Skippy," Andy Jerpe, of Erie Norge Sales, sold Skippy's master a refrigerator.

Text of the sales letter follows:

"Dear Skippy:

"I sure hope you have all the cats in the neighborhood under control, so that you can take time out to read this letter and give me a hand. Skippy, I need some help, so as long as we know each other pretty well by now, I am going to ask you to deliver this message to Bill Bercher (the prospect) for me.

"Do you remember the day when Mrs. Bercher wasn't looking, and I showed you a picture of the Norge Rollator refrigerator that matched your Norge range? I said to you, 'Skippy, this kitchen will never be complete until that refrigerator is here to match the range!' Then you shook your head and said, 'Doggone it, I know it!'

"Well, Skippy, there's only one way for us to solve that problem, and that is for us to sell this Norge refrigerator to Bill Bercher, and if we do, I'll give you a swell string of wieners, and a soup-bone, for commission for helping me close the deal!

"Here's what you have to do. When he is through supper and feeling good, put your head on his knee and say, 'Bill, I've been talking to that tall, funny looking Swede by the name of Jerpe. We both agree that a Norge Refrigerator should be in that kitchen, but he is afraid to come out here to sell it to you because you might sic me on him and ruin a beautiful friendship, and besides he has only one pair of pants to that suit he always wears.'

"Tell him about those nine different

shelf arrangements, and that in the new job you can store a whole case (Bill knows what I mean), watermelons, turkeys, and other big items.

"Ask him to come down to the store Saturday afternoon with Mrs. Bercher. Skippy, if you handle this job right, all the cats in the neighborhood will wonder why you disappeared, because you'll seldom leave the kitchen!

"So long, and thanks for the help."

"ANDY"

### Evansville Dealers Put On Essay Contest

EVANSVILLE, Ind.—"Why I Prefer An Automatic Refrigerator" was the subject of an essay contest sponsored by 13 Evansville dealers to stimulate interest in 1937 models recently.

Cash prizes totaling \$25 were awarded to winners and the contest was announced in an eight-page special refrigeration section in the local press. Contest participants were invited to study ads of dealers and to visit dealer showrooms for essay material.

Participating dealers were:

Bawell Sales Co. (Westinghouse); Bruckner Radio Corp. (Frigidaire); Evansville Electric Service Co. (General Electric); Finke Furniture Co. (Grunow); Harding & Miller (Norge, Crosley); Kern's Furniture (Stewart-Warner); Montgomery-Ward Co. (Food Froster); Moutoux' Auto & Machine Co. (Westinghouse); R & G. Furniture Co. (Frigidaire); Schear's (Westinghouse); Schuttler Music Shop (Stewart-Warner); Sears Roebuck & Co. (Coldspot); Southern Indiana Gas & Electric Co. (Frigidaire-Electrolux).

### WASHERS

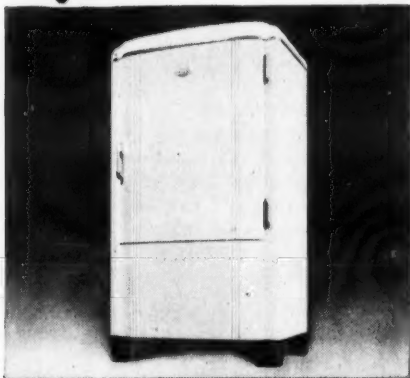
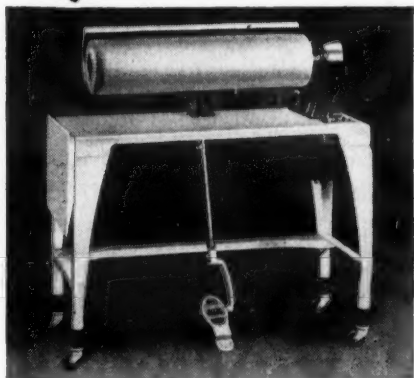
Seven models—both spinner and wringer types—covering a complete price range. Every prospect's wants can be met with Copeland.

### IRONERS

Here, at last, is a precision built ironer with a new operating simplicity which will win every woman who sees it.

### REFRIGERATORS

With the famous Copeland twin-cylinder compressor, in addition to ALL of the worthwhile features found in other refrigerators.



## Copeland offers More of Everything to help YOU make More Money

● Whether you handle all of these Copeland appliances or only one of them, you'll find that Copeland offers more of everything that it takes to assure generous profits. Smart, modern styling; sales-compelling prices and Copeland's traditional operating economy and mechanical dependability are only half the story. The other half lies in Copeland's ideal dealer franchise, its liberal financing plan and the strong advertising and merchandising help which it offers. For the complete story, wire or write Mr. J. D. McLeod, General Sales Manager, Copeland Refrigeration Corp.

**COPELAND**  
REFRIGERATION CORPORATION  
DETROIT, MICHIGAN

PIONEER MANUFACTURERS OF REFRIGERATION

Porcelain enamel makes bigger profits possible

Porcelain enamel makes satisfied customers

Porcelain enamel is by far the safest, most dependable, most profitable finish to both those who make and sell, and those who buy and use

**PORCELAIN ENAMEL INSTITUTE, INC.**  
12 NORTH MICHIGAN AVENUE • CHICAGO





(Concluded from Page 10, Column 5) ran night and day production shifts to fill the orders.

"We are going to double our factory space and production facilities during 1937 to take care of the even greater sales expansion which we anticipate," Mr. Searle stated.

Kelvinator got its foothold in the British market in 1926, chiefly through the efforts of Howard A. Lewis, vice president of the then Kelvinator Corp., Detroit.

### English Adaptation

Operating in a straight merchandising capacity at first, the firm did not really catch its stride, Mr. Searle says, until those who headed it up realized that the imported American product had to be adapted to fit the English market.

The result was that Kelvinator Ltd. added engineering and manufacturing facilities, and the English Kelvinator line became essentially an English product.

A notable example of the new state of affairs was that the cabinets were hand-made, thus breaking away from the mass production-assembly line methods of Grand Rapids and Detroit.

Freezing-hardening-storing ice cream cabinets now made by Kelvinator Ltd. are designed and patented by the British company's own engineers.

Mr. Searle has been with the firm since 1927, at which time he was service manager, and since which time he has advanced from one position to another until he reached his present office. He has been in the refrigeration business since 1904.

Associate directors of the British Kelvinator organization are L. G. Hawkins, E. A. Roden, who is also secretary, and C. E. Abbs, Canadian director.

Charles M. Wegand, an "international American" who has spent 15 years of his business life in France, is assistant managing director. F. E. Kemly is general sales manager.

American directors are G. W. Mason and H. A. Lewis, president and vice president, respectively, of Kelvinator Division, Nash-Kelvinator Corp.

### Sales and Distribution

Kelvinator Ltd. handles sales and installations direct for the retail trade in the 40-mile area surrounding London (where the best customers are), and also sells through electric supply companies, department stores, and other outlets in the territory.

Distribution outside of the London area is handled through carefully selected provincial dealer organizations, operating under their own names as independent companies.

Each dealer is given a franchise to

sell in a limited territory, the size of which is determined by the market possibilities of the territory and the dealer's facilities for covering it, according to Mr. Searle.

At the time of my visit, Kelvinator had about 60 sales and service agents in the provinces.

Numbered among the cities in which Kelvinator has appointed dealer representatives are Glasgow, Edinburgh, Birmingham, Manchester, Liverpool, Dublin, Belfast, and others.

To keep in close contact with its dealers' activities, the company has divided its provincial sales territory into four sections, each of which is supervised by a district manager. These field men work under R. H. Lancaster, provincial sales manager at the London office.

### No Warehousing

Direction of the entire Kelvinator sales organization is handled by two general managers at the London sales office, namely G. D. Davis, supervisor for domestic refrigeration, and J. Forrester, supervisor for commercial.

Both gentlemen have organized "teams" and territories. Geographically, England is just like a big U. S. district territory, say, for example, the Southwest, and prompt deliveries can be made from the factory to any part of the country. Thus the need for scattered warehouse facilities is eliminated.

Sales training schools for dealers, salesmen, and servicemen are conducted by factory experts at both the Kelvinator offices in London and at dealerships in the provincial territory.

### Anti-Canvassing

One ticklish situation bothering British salesmen is the matter of house-to-house canvassing. British tradition, British conservatism, and the British yen for privacy combine to make the idea of agents' ringing doorbells to dig up prospects abhorrent to most true Britishers.

Such canvassing is beginning to make a little headway despite the opposition. I asked Mr. Searle if he thought the British people would get used to it.

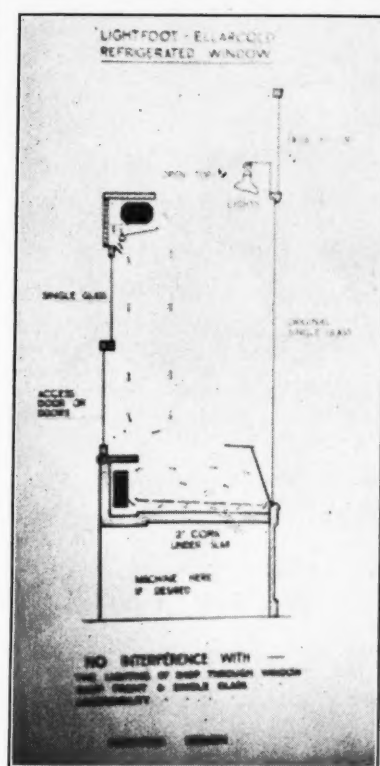
Asked he by way of reply: "Does the American woman really like door-to-door canvassing?"

Prospects in the British market are more concerned today with the comparative value of the different lines offered, and with the reputation behind the products, than with the arguments for electric refrigeration as such, Mr. Searle believes.

He says that the English people are making the jump from no refrigeration at all direct to electric refrigeration, skipping the usual stepping stone of the ice box.

Mr. Searle told us that until the

## Lightfoot Diagram



Photographed through glass, this diagram shows how Lightfoot refrigerates a show window.

larger refrigeration companies broke down the resistance, the English combined promotion activities of the people as a whole considered their cellars to be "ideal" for cool storage food. England's low outdoor temperatures made them so, reasoned the Englishmen.

In effect, the argument was that the cellars "kept grandmother's and mother's food—they lived to be 80; so shall we."

That this argument has successfully been overcome is shown by the comparative percentages of the total volume of sales in both commercial and household refrigeration in 1936, as contrasted with the situation existing at the beginning of the drive.

When the campaign started, 60% of the business was commercial, 40% domestic. By last year domestic sales had mounted to 52% of the total, relegating commercial to 48%.

The English companies don't put in big stocks of units to offset possible rush orders. Machines are produced almost solely as they are ordered. Manufacturers reason that while warehousing might be advisable, it is also impracticable just now because the building of warehouses would eat into their already limited productive space.

Kelvinator's present line of products

includes units of from 1/4 hp. to 20 hp. Equipment for every practical application of domestic and commercial electric refrigeration is provided within this range.

Cabinets of 2 1/2 and 3 cubic feet capacities are completely manufactured by the London company except for the compressors, all of which are imported from the United States and Canada.

Other products manufactured by the English company are commercial coils and condensers, base plates, flywheels, evaporators, and forced-convection units.

Chief purchasers of Kelvinator commercial equipment, stated Mr. Searle, are butchers, grocers, dairies, fish merchants, hotels, restaurants, brewers, bars, ice cream vendors, and proprietors of milk and "snack" bars.

The ice cream business has been particularly steady for many years.

Air conditioning has made slower progress in this country than has domestic and commercial refrigeration, Mr. Searle says, chiefly because of the cool climate; but Kelvinator is making a steadily increasing number of installations, both residential and commercial.

### Lightfoot-Ellarcold

Affiliated with Westinghouse, Lightfoot Refrigeration Co., Ltd., associated for over half a century with the development of mechanical refrigeration units, which now manufactures all types of refrigerating and ice-making machinery and equipment.

Lightfoot and Lightfoot-Ellarcold refrigerating machines and cabinets are available for nearly every purpose, and range from actual ice-making equipment to small refrigerated display cabinets. Lightfoot-Westinghouse commercial units, with cabinet by Lightfoot and refrigerating unit by Westinghouse Electric & Mfg. Co., are also available in a variety of models.

Lightfoot compressors are of the open type, either vertical or horizontal. All working parts are left accessible for cleaning or adjustment, and the units are mounted on base-plates.

Lightfoot condensers may be had in a variety of types, namely: normal open type, surface evaporative type, submerged type, double-tube type, and Lightfoot patented flooded type. In cases where water supply for condensing purposes is scarce or expensive, the company recommends the surface evaporative type, as the quantity of water required is only a fraction of that required with the other types.

Lightfoot also produces cold-storage and meat-freezing equipment operating under the brine system, direct-expansion system, or air-circulation system.

A small cold-storage plant is also manufactured for use by butchers, hotels, private residences, etc. This unit has been specially constructed so that it may be operated by an unskilled attendant with no previous knowledge of refrigerating machinery.

Marine types of refrigerating machines are also produced by this concern, which are applicable not only for preservation of passengers' provisions and perishable cargoes, but can also be applied simultaneously to the manufacture of ice.

### Tropical Machines

Special machines have been designed by this company for use in tropical countries, where the efficiency of its regular lines of equipment is challenged by extraordinary climatic conditions.

Lightfoot Refrigeration Co. lists among the users of its equipment, the following governments: French, Russian, Italian, Japanese, United States, Argentine, Chilean, Peruvian, Brazilian, Spanish, and various agencies and colonies of the British Empire.

Included in the Lightfoot-Ellarcold line are various types of refrigerating machines, cold rooms, commercial cabinets, refrigerated windows and counter displays, unit coolers, ice cream freezers and storage cabinets, and milk-cooling plants.

The Lightfoot-Ellarcold unit cooler, for cooling beer and wine cellars, restaurants, kitchens, fruit storage rooms, and other places where the desired temperature is 45° F. or above, may be used as either ceiling or wall fixtures. No air ducts are required.

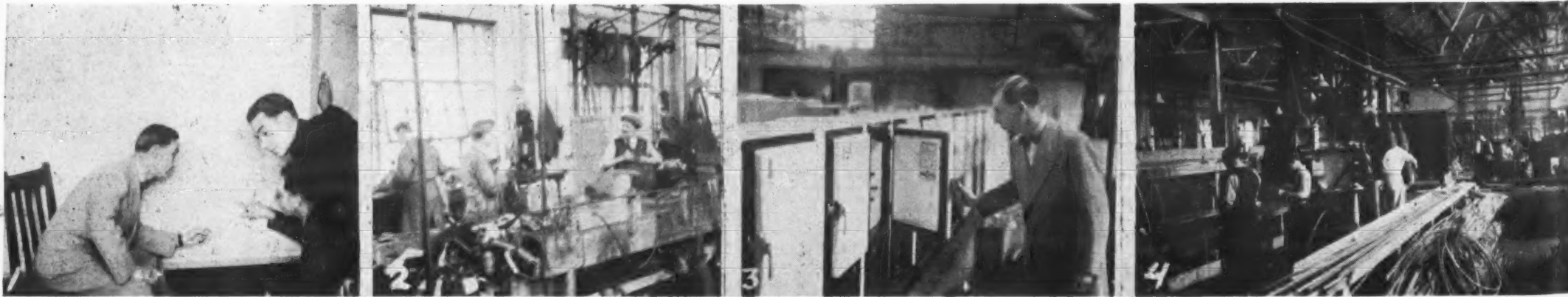
Machine units for these installations may be had in either water or air-cooled types, all having welded liquid receivers, vertical, twin-cylinder compressors, automatic controls, and patented thermostatic regulators. All these units employ methyl chloride as refrigerant.

Head office and show rooms of Lightfoot Refrigeration Co., Ltd., are in Bush House, London, W.C.2, where we met William Maclean, sales promotion manager, and V. Alex Mattick, manager of Lightfoot's Westinghouse division.

Locations of the company's branch offices follow: Ellarcold Works, 1 Cheapside, Birmingham, 5; 15 Bridge St., Bristol; 251 N. Circular Road, Dublin; 23 Hill St., Edinburgh; Central Station, Queen St., Exeter; 48 W. Regent St., Glasgow, C.3; 31 & 36 Cabinet Chambers, Basinghall St., Leeds, 1; 505 & 507 Corn Exchange Buildings, Manchester; 12B Saville Row, Newcastle-upon-Tyne.

The company also has resident service engineers and depots located throughout Great Britain and the Irish Free State.

## Kelvinator Plant in London Is Self-Contained Production and Merchandising Unit



(1) Managing Director Ralph Searle (left) checks over sales outlets on the distribution map in Kelvinator's main offices in London. (2) There seems to be lots of activity and plenty of equipment in the service department. (3) Mr. Searle inspects a cabinet on the household assembly line. (4) Making commercial cases.



(1) Loading a big truck for a shipment to an outlying district. (2) Display of ice cream cabinets, now enjoying a big demand. (3) Corner of the showroom at factory headquarters.



# THE AIR AGE

BY F. O. JORDAN

## Dr. E. Vernon Hill On Condenser Water

Worthy of repetition are some of E. Vernon Hill's expressed worries about condensing water.

Says the veteran Chicago air-conditioning expert, who has just joined the staff of Refrigeration and Air Conditioning Institute, "It is a sad reflection on our engineering intelligence," and might even be cataloged as "an economic crime" for us to supply, purify, and distribute enormous quantities of water, only to add a few B.t.u. to it in a condenser which cares nothing for its palatability, and then dump it down the sewer. B.t.u. and all, more valuable for some usages even than it was before.

Furthermore, demands Dr. Hill, admitting the importance of water supply for the further growth of the already husky industrial baby, what are you going to do with the condensing water when you get through with it—with the sewers already sewered to the bursting point?

Dr. Hill's novel answer to his own question is to put the City's pure but warmer water back into the city water main where you got it, after it has condensed your refrigerant, for it would be the same pure water as before you used it, only warmer. The added expense of cooling it for drinking purposes, he points out, would be much more than balanced by the reduced expense of heating it for cooking, washing, bathing, etc.

"But who drinks water in downtown Chicago anyway?" demands Mr. Hill, and again answers his own question regarding the drinking habits of the "people as I know" of the "400,000 habitues" with the words "very few."

Another logical approach might be through the sewer itself, for if the drainage system is so full of water, as Mr. Hill believes, why not take the sewer, install a strainer for stopping the big pieces, and take all of the cooling water that your condenser desires?

And it would have one decided advantage over the proposition of the member of the Board of Consulting and Contributing Editors of "Heating, Piping, and Air Conditioning," in that it should not be subject to the same veritable "storm of illogical protest" to which his plan is subject, for who cares what happens to things once relinquished to the sewer?

## Air Conditioning by Doctor's Prescription

In the most modern or "Three Chart" Hospital, air conditioning prescribed by the doctor to suit the particular ailment is now a fact.

Where once there hung two charts upon the patient's bed or upon the wall of his ward, there now hang three, at any rate if the hospital is provided with the latest type of special hospital air conditioning in whose design doctors have collaborated with air-conditioning engineers. Practice has been for charts for each patient to be prepared under direction of the doctor for the guidance of the nurse in caring for the patient. One of these charts schedules the administration of medicine as to time and character, while the other is the diet schedule.

Both charts are prepared for each individual case, considering the individuality of the patient, and the character and stage of the disease.

But in addition to the dietetic and medicinal influences is the very serious effect upon the patient of the condition of environmental atmosphere. The dry heat of the non-conditioned hospital is a serious obstacle to recovery from certain types of disease, while death frequently results

from the endless heat of summer to persons weakened by sickness.

In the latest type of air-conditioned hospital, the system and its controls now are so arranged that the condition in each ward may be varied and held as desired, independent of conditions in the remainder of the building. In such hospitals, a third chart prescribing the atmospheric condition most beneficial to the patient has been added to the charts prescribing food and medicine.

Thus the atmosphere of the ward is maintained at the condition most beneficial to the patient, considering his physical condition, as well as the nature and stage of his sickness. Humidity to counteract dry throats, heat to alleviate rheumatic pain, cool surroundings to sooth the fevered brow, all regulated to the exact, proper degree, now is an accomplished fact.

## All-Electric Restaurant

Now completely all-year air conditioned are the Toll Houses, distinctive up-to-date St. Louis restaurant chain which standardizes upon use of latest appliances for cooking and serving food.

The Toll House management goes in for all the latest wrinkles, such as—

Cooking without fire—because of the cleanliness of electricity, and the ease with which it can be so regulated as to develop in the highest degree that food quality flavor superior even to the flavor of things that "mother used to make."

Steam tables without steam or water, because of their sanitary coolness and the ease with which they can be so regulated that the quality and flavor of perfectly cooked foods are preserved, even to the "king's taste."

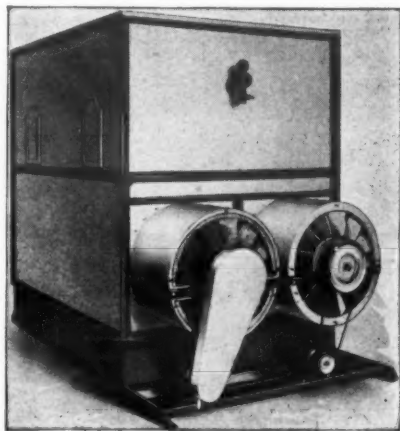
And now, so that the consciousness of the epicurean from Missouri may be left free from considerations of discomfort to concentrate itself solely upon the joys resulting from sense of taste, air-conditioned summer comfort has been adopted for the benefit of the heavy eater who once found it necessary to forego his favorite pleasure during the hot sticky summer months.

## Low Cost Housing?

Just to show what can be done in the way of low cost housing projects for those of us who can afford their luxuries, let's gas up and hop off for England.

If the present rate of low-cost housing construction continues there, it appears that before long just about all the "Tommies" below the social level of "Squire" shall have moved into new homes.

## BINKS TOWERS SAVE MONEY!



Indoor Forced Draft Type

**FORTIFY** yourself on the water consumption & disposal problem which is becoming more difficult. In many sections, MAINS (both supply & disposal) are becoming inadequate as industries' demands for water increase.

Use BINKS TOWERS! They give constant recirculation and cut water bills as much as 80%.

Write for Bulletin 70 Today!

**BINKS MANUFACTURING Co.**

3114-40 Carroll Ave., Chicago.

The surprising feature is how well-planned, modern, and attractive are the buildings and their immediate surroundings, which in many respects seem to be much more desirable than the castles which are rich principally in nothing more conducive to comfort than tradition. Possibly a new social problem will originate from the resultant inferiority complex of the landed nobility, and the complacency toward them of the housed masses.

Many of the housing projects are erected in the midst of clearings made in Londontown jungles by slum clearances resulting from condemnation as unfit for human habitation of relics dating back 150 years or more. Even in such areas, beautiful grounds and clear airy spaces result from the shrinkage in ground space occupied by the buildings themselves—even with considerable increase in actual livable floor area—made possible by the much greater heights of the new structures over the tenements whose places they have taken.

Other projects are set down right out in the meadows far from the din and grime of the great cities, where living conditions are ideal, and where the fullest advantage is taken of the opportunity for wonderful parks and playgrounds right at the very doors of the low-cost housers.

In fact it seems to be essential for at least one such rural project to be located near each city before local slum clearance can begin, as otherwise there would be no place but the cobblestones for the slum-cleared Tommy during the interim between the abolition of his ancestral home, and the completion of his new residence.

The only stroke remaining before

a masterpiece results is the moving of these low-cost housings to the U.S.A., and the inclusion in them of some air conditioning, for the social problem which would result would be of no little assistance in the solution of one of air conditioning's gravest problems, to wit, where to peddle its wares. Anyhow, a few more lobbyists in Washington could do no harm.

## Odor Control

Sometimes complaints are voiced about the peculiar mixture of smells which emanate from the air conditioner after it has been in use for some time. Such odors seem to come from the tobacco smoke, beer fumes, and organic matter remaining upon the surface of the cooling and dehumidifying unit, after it has taken them from the air stream.

While no one is known to have died as the result of such odors, there is nothing to be gained from having such reminders of a dead past linger on forever, so that the "air-conditioning smell" is at times a problem.

For this problem, Oakite Products, Inc., offer a solution which they call "Oakite Slime Remover," and which they declare will remove odors and annihilate bacteria if sprayed upon the offending surface from time to time in concentration of two ounces per gallon of water.

In certain types of air-conditioning units water is employed for washing or scrubbing the air before it is circulated to the rooms that are being conditioned. A considerable amount of organic matter from the recirculated air is introduced into such re-circulated wash-water, providing sufficient food material to allow bacteria to grow and increase rapidly. Because of this, algae and

slime growths accumulate on surfaces directly in contact with water, and thus interfere with the efficient operation of the system.

In addition, surfaces of coils used for heating and cooling air also accumulate deposits and re-infect the washed air, so that air washed with water of high bacterial content, or air that contacts bacterial-growth on surfaces, is believed to become a carrier of infectious organisms detrimental to health.

When added to the re-circulating water used to wash or scrub air, Oakite Airefiner, as the product is known, is declared to keep the wash-water sterile and prevent the growth of slime and algae deposits in the system. The material is said to be completely soluble, and to provide a stable, colorless solution that is safe and non-toxic, and non-corrosive to metal surfaces.

## Hulse Named Factory Sales Engineer at Gar Wood

DETROIT—Leon C. Hulse has been appointed factory sales engineer of the air-conditioning division of Gar Wood Industries, Inc., according to Frank H. Dewey, general manager.

Mr. Hulse, a graduate mechanical and registered civil engineer, has been connected with the division for the past six years. His new work includes supervisory engineering duties and participation in general sales activities.

## McKee to Distribute Airtemp In Shreveport

SHREVEPORT, La.—C. F. McKee has been appointed distributor for Airtemp, Inc., and has opened a display room.

## HERE'S YOUR BOOK OF FACTS ON Air CONDITIONING



## Distributors AND DEALERS IN ELECTRICAL APPLIANCES...

A sales and product manual that even veteran air-conditioning men find valuable. Defines in simple language the laws of humidity, temperature and refrigeration. Explains such important factors as dew-point and circulation. Outlines the application of air-conditioning to business offices, shops, professional use, hotels and institutions and to apartments and homes. Answers concisely and correctly the questions that air-conditioning salesmen are continually called upon to answer. Actually teaches salesmen how to sell!

No matter what line of appliances you are now showing—air-conditioning, oil burners, stokers or electrical refrigerators—see—read—and analyze the wealth of material presented in this smartly illustrated volume of sixty pages. Free to any established dealer or distributor on request.

*Pacific*

## CONDITIONAIRE

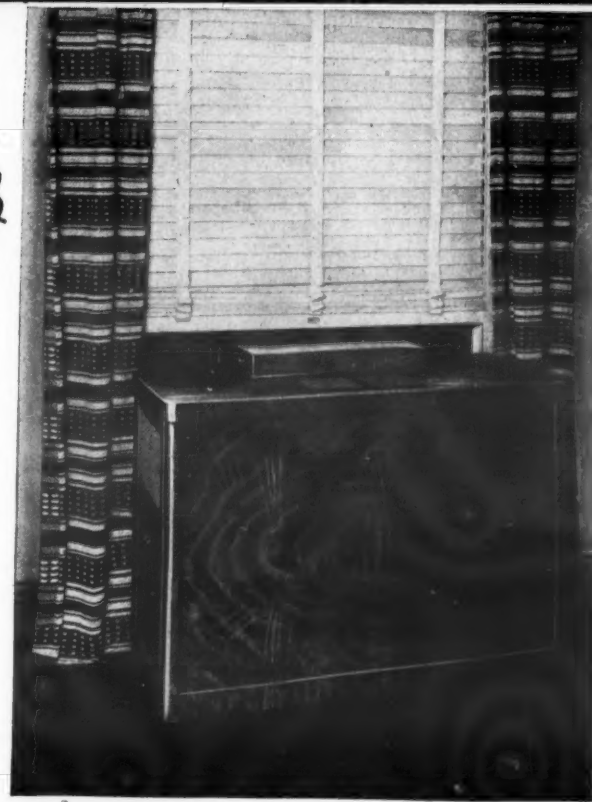
PORTABLE • SELF-CONTAINED • AIR-COOLED DURING OPERATION!

Distributors and dealers are getting more sales and doing more business with the new 1937 Pacific CONDITIONAIRE line of portable air-conditioning units. The Pacific line comprises three expertly engineered and handsomely streamlined console models which vary in capacity. These are equipped with 1/2 ton, 3/4 ton and 1 ton "M & J" compressor units respectively. The new 1/2 ton Window Sill Pacific CONDITIONAIRE completes the line. But, there's a "big reason" behind Pacific CONDITIONAIRE'S success. All compressors are air-cooled during operation. This feature alone puts Pacific CONDITIONAIRE way ahead in the portable air-conditioning field. Not only does it eliminate tapping into water lines, but actually ends costly water consumption. Consequently, ultimate users prefer and specify Pacific CONDITIONAIRE on these basic economies of installation and operation alone.

The Pacific Franchise is Valuable. Get Pacific's Manual. Profit with Pacific!

**PACIFIC MFG. CORPORATION**

4223 LAKE STREET • CHICAGO  
Los Angeles Office 1320 S. Hope St.



BUILT IN

4

ATTRACTIVE  
MODELS!

Progressive Jobbers  
Everywhere Stock  
A-P Controls.  
**AUTOMATIC PRODUCTS COMPANY**  
CHICAGO, ILL. • DETROIT, MICH. • ST. LOUIS, MO.  
MILWAUKEE, WIS. • MINNEAPOLIS, MINN.



## AIR CONDITIONING AND REFRIGERATION NEWS

Trade Mark registered U. S. Patent Office; Established 1926 and registered as Electric Refrigeration News.

Published Every Wednesday by  
BUSINESS NEWS PUBLISHING CO.  
5229 Cass Ave., Detroit, Mich.  
Telephone Columbia 4242.  
Cable Address: Cockrell-Detroit

Subscription Rates  
U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: \$4.00 per year; 2 years for \$7.00. All other foreign countries: \$6.00 per year. Single copy price, 20 cents. Ten or more copies, 15 cents each; 50 or more copies, 10 cents each. Send remittance with order. Notice: Please do not pay money to strangers claiming to represent this paper. We employ no subscription solicitors. Send orders and remittances by mail.

F. M. COCKRELL, Publisher

GEORGE F. TAUBENECK, Editor  
PHIL B. REDEKER, Managing Editor  
THEODORE T. QUINN, Assistant Editor  
WINIFRED HUGHES, Assistant Editor

Departmental Editors:  
K. M. NEWCOMB, Refrigeration Service  
F. O. JORDAN, Air Conditioning  
Staff Reporters:

WILLIAM H. LONG, ALFRED JONES,  
JAMES McCALLUM, and R. H. POTTER

R. T. CARRITHERS, Advertising Mgr.  
HELEN K. GILMORE, Asst. Adv. Mgr.  
JAMES B. SMITH, Asst. Adv. Mgr.

JOHN R. ADAMS, Business Manager  
ROBERT P. NIXON, Asst. Business Mgr.  
JEAN H. ADAMS, Subscription Manager  
LOLA E. DEW, Circulation Manager  
WINIFRED MERSON, Spec. Representative

Advertising Representatives:  
John B. Gallagher Co., Inc.,  
11 W. 42nd St., New York, N. Y.  
Pennsylvania 6-1380  
Lewis & Noelle  
612 N. Michigan Ave., Chicago, Ill.  
Superior 8550

Member, Audit Bureau of Circulations  
Member, Associated Business Papers

VOL. 21, No. 1, SERIAL No. 424  
MAY 5, 1937

Copyright, 1937, Business News Pub. Co.

## Salesmen's Quotas

SUCCESSFUL and intelligent sales management in specialty selling today demands that each dealer must have a definite mark to shoot at—a sort of ever-present Standard which he must continually see and be reminded of—if he, and the business he represents, are to succeed. That "bogy" is his quota.

Most astute economists and business leaders agree that America is on the eve of another period of inflation, if not another boom as great or greater than the one of 1926-1929. Which means that sales quotas enter the picture with increasing significance. If we are approaching more years of plenty, companies must adjust their projected business to avoid underestimating their normal expectancies of sales, and to take advantage of trends of the times in merchandising their products.

### Factors Involved in Assigning Quotas

Normally a dealer is assigned a quota based upon his projected share of the total business sought by the company, tempered by factors which determine potential sales within the territory he covers.

A salesman's quota often represents the amount of sales he must produce to return the company a normal profit on the money spent to pay his income and expenses.

Arriving at any logical and workable quota system involves several problems, such as avoiding the spending of too much money on the system itself, making the quota plan as fool-proof and easy as possible for the men to understand, avoiding over-optimistic goals and consequent demoralization of sales forces when sales shrink. Hopelessly extravagant marks are just as costly as too easily attained goals.

The main problem is one of striking a happy medium. Here is the real secret of the successful and productive quota: to set each dealer's quota within the limits of his abilities and the potentialities of the territory he covers.

Territories should be "weighted," so that dealers having the best territories will be required to show a higher percentage of gain than those who work the "tougher" areas, or those where less business has been done by the company in the past.

### Past Sales in Territory Must Be Considered

In working out a quota system for a dealer, an analysis of past sales must first be made. By studying each district—what it has produced in sales, its reported sales resistance, its income and general conditions—the sales manager can determine which of his sales organizations are not producing.

The next logical step is to figure out a workable set of statistics for each territory, and to determine how much national conditions may influence local sales. Most such conditions are known to the alert sales manager; the statistics may involve population figures, the value of manufactured products in the territory, home ownership, automobile ownership, bank statistics, credit ratings of customers, etc.

### Quota Systems in the Refrigeration Industry

Several interesting and effective methods of arriving at a quota system have been worked out by sales organizations in the refrigeration industry.

Many distributors prepare a chart, on which sales to date for each territory are placed in one column, and compared with the percentage of total company business heretofore done in that territory, in another.

On a second chart is tabulated opposite each territory its "buying units" in terms of population. This represents sales potential. On a third chart is tabulated the territories in column one, plus the totals of the first two charts in a second and third column. "Results," placed in a fourth column, are determined by reconciling the figures of the second and third columns.

### Another Statistical Method For Computing Quotas

In arriving at final figures for a quota concerning any given territory, another plan is to put together half of sales to date, one-fourth of a trial quota figured out on the basis of the territory's population, and one-fourth of a trial quota based on outside economic factors. The sum of these three items is a good final working quota.

Most successful sales managers agree that past figures for sales in each territory are the best indication as to what may be expected in working out a dealer's quota. Too, the individual dealer's previous record, his general ability, and his weak points enter into the picture.

After territorial quotas have been assigned to dealers, the latter, in turn, generally assign quotas to their salesmen.

### Progress Charts

#### Stimulate Salesmen

Keeping daily quota sheets, which are always before individual salesmen to consult at the end of each day, have been found successful by many sales crews.

On these sheets the salesman can see what his annual quota is, and whether he is above or below it on a daily schedule as the year progresses.

For instance, if his quota calls for 250 refrigerator sales in a year of 250 working days, and by June 30 he has sold only 110, he is 15 sales below the half-year's mark of 125.

Capitalizing on the average salesman's optimistic opinion of his own selling powers is advised by some sales managers. One suggests setting up a chart of four classifications, each with a certain number of sales, to which a salesman may elect himself.

In other words, the salesman is allowed to "write his own ticket," and his pride prompts him to choose the higher quota.

Let us say Class A meant 200 sales per year, Class B 150, Class C 100, and Class D 50. The result, he finds, is that most men chose the first or second class, and set to work to make more sales than they would under a less exacting system.

### 'Trial and Error' Method Now Frowned Upon

The "trial and error" method of arriving at quotas—combining as many different indices as possible to reduce total error—is being generally frowned on today because, in every combination of this sort, the factors employed bring their bad as well as good qualities into the result. In other language, too many cooks may spoil the broth.

### Factors Used in Determining Potentials

Breaking quota indices down, we find several factors which manufacturers use to determine potentials for a particular distributor's territory. Among these are: population, automobile registrations, manufactures, income tax returns, bank deposits, telephones, power line customers, retail outlets, farms, and seasonal fluctuations in buying power. Each has its advantages and weaknesses.

Population, the easiest to use, becomes faulty when one considers that two cities of equal size may differ vastly in their consumer buying power. Most automobile registration indices tend to undervalue city incomes and to overvalue those in rural sections. But they do offer one advantage: a family which can afford a car can generally afford to buy a refrigerator.

Statistics regarding manufactures fail chiefly because they show a fairly large concentration of manufacturing in a comparatively few industrial sectors. Income tax returns are generally considered one of the best indices.

Utilities officials generally sanction the power line customer list as the best basis for computing quotas in their territories. Independent outlets, like department stores, usually base their figures mainly on past years' sales in comparison with the expected national market (as guessed by manufacturers) for the coming year, modified by local saturation.

### Some General Influences To Be Borne in Mind

Whichever way a sales manager works out his quota, there are two worthwhile factors to keep in mind: don't overestimate or underestimate either your territories or your men, and in guessing future business keep a weather eye out for such factors as inflation and general business conditions.

It is entirely likely that every manufacturer, distributor, and dealer in the air-conditioning and refrigeration business may find it necessary to revise his notions on quotas in the light of current inflationary tendencies, and the government's attempts to check them.

## LETTERS

### Red Book to Be Distributed Soon

Haverly Electric Co., Inc.  
East Syracuse, N. Y.  
April 22, 1937.

Dear Sir:

Under date of March 25 under Reference No. as above, you informed us that the 1937 Master Catalog (the "Red Book") would be ready for distribution soon.

Our copy not having come to hand, we are again inquiring as to when the same can be expected.

A. H. KASTEN,  
Sales Prom. Mgr.

### A Hot Prospect for Air Conditioning

Copperhill, Tenn.

Dear Sirs:

On my application for a copy of your Red Book I stated that I was not in the market for equipment at the present time but expected to be soon. Now, I find that I have an immediate need for one as I have interested several individuals of the Tennessee Copper Co., who wish to have their offices conditioned. I am estimator for this company. I will, therefore, be glad to receive a copy of your first mailing.

J. B. MONCRIEF.

Answer: After several delays due to the usual problems encountered in the development of an entirely new type of publication service, we are pleased to report that the first copies of the Red Book—The 1937 Master Catalog of Refrigeration and Air Conditioning Products—will be ready for mailing within a few days.

### Sales Boom in Canton

The Canton Hardware Co.  
Refrigeration Dept.  
215 Market St.  
Canton, Ohio  
April 24, 1937.

Editor:

Please send us 15 copies of your 1937 domestic specifications, and bill us.

YOUR REFRIGERATION NEWS may be interested in knowing that refrigeration business in Canton, Ohio, is literally booming. We are distributors for York commercial and air conditioning, Gloekler cases, Universal Cooler refrigerators, and dealers on Electrolux. Our total volume in 1937 to date is slightly more than triple the same period last year. Largest gain is in domestic; the commercial lines show about double last year's business.

I understand that other old established dealers in this territory have all been enjoying a record business, and the many new dealers who have jumped into the picture in the past year also seem to be doing a fair amount of business.

At the present rate Canton will be pretty close to the saturation point by the end of 1939.

J. W. BROTHERS.

### An Eleventh Generation American Speaks

664 Washington St.  
Brighton, Mass.  
April 10, 1937

Gentlemen:

Employers and a multitude of employees will commend, word for word, your current editorial, "Grab it while you can." While experience and observation tend to show that, left alone, a large majority of employees are equitably minded, the sad fact remains that a small and ruthless minority can intimidate them into

situations, calamitous to everybody concerned, and the public at large.

The reasoning of those who control the Federal and many of the state governments is beyond the conceptions of those responsible for the industry of the nation. The ones in power appear to be insatiable with greed for more power, and have no sound ideas how to use it for general good. They scorn rights and opinions that run contrary to their own, and logic has ceased to prevail.

If the United States lives through the results of such mal-administration—and they will—we can go anywhere. (No acknowledgement or publication of this communication is expected, or necessary.)

A. L. JEWETT

Business News Publishing Co.  
5229 Cass Ave.  
Detroit, Mich.

Mr. Jewett:

Referring to your letter of April 10 commenting upon a recent editorial in the News, we note that "no acknowledgement or publication of this communication is expected or necessary."

We are pleased to receive the opinions of our readers regarding the editorial opinions published in the News and we will be glad to have your permission to publish your letter.

F. M. COCKRELL,  
Publisher.

664 Washington St.  
Brighton, Mass.

April 22, 1937

Gentlemen:

Of course, you are quite welcome to print my letter of the 10th referred to in your acknowledgement of the 21st.

My observation has been that most folks, who may write any publications, are actuated as much with the hope of seeing their names in print, as by any sentiment that they may feel like expressing. So, the infrequent times that I may send such a letter, I always add something to indicate that the communication carries no intention beyond a comment. I know how busy you gentlemen are, and how many useless things you receive.

I am far from being in accord with many of the New Deal economic policies. Eleven generations of my immediate family have grown up in America, and, after it has been made the best land in the world, in which to live, I hate to see the new-comers trying to get us into a situation, which might be as bad as that, from which our folks escaped some three hundred years ago.

I have traveled much of North America many times. I have had much experience with good and bad labor situations, and I know that the run of employers prefer to do the right thing with their employees. I think that bad situations can be corrected without upsetting practically all industry, if those in authority have the will to do it.

A. L. JEWETT

### 'Comfort Cooling' Series Value Is Perceived

Kinetic Chemicals, Inc.  
Wilmington, Del.

April 26, 1937

Mr. Carrithers:

I have your letter of April 22 attaching a tear sheet from the April 7 issue of AIR CONDITIONING AND REFRIGERATION NEWS in which you drive home the point that air conditioning means comfort cooling.

We cooperated with the Air Conditioning Manufacturer's Association last year in advertising the definition of air conditioning, which ads appeared in the magazine Time.

I think it will be of great benefit to the whole industry if you will on a page of your own drive home this message, in each issue of your publication. Also supplement it with editorial matter.

Thank you very much for drawing my attention to this copy.

W. W. RHODES,  
Sales Director.

Frick Co.  
Waynesboro, Pa.  
April 26, 1937

Advertising Manager:

We thank you very much for sending to various officials of our company the reprint of your advertisement about air conditioning.

This expresses our sentiment regarding the importance of refrigeration in air conditioning very well, and we congratulate you upon getting out such a successful advertisement.

TERRY MITCHELL,  
Advertising Dept.

### Features and Prices

Covington Electric Shop  
32 East Seventh St., Covington, Ky.  
Editor:

Enclosed is check for \$1 to pay for 5 copies of booklet showing convenience features and prices of the several makes of refrigerators. We hope these are available for they give valuable information to salesmen in our line of business.

H. C. BRYSON.



## DEPARTMENT STORE NEWS

### NRDGA Studies Trends In Instalment Selling

NEW YORK—To gauge instalment selling trends and to interpret their implications to retail distribution, the Credit Management Division, National Retail Dry Goods Association, has launched a new survey amplifying and enlarging upon the one completed by the division last year, according to J. Anton Hagios, division manager.

A questionnaire on 1936 instalment sales has been mailed to credit executives of all N.R.D.G.A. member stores in an effort to check the Credit Management Division's belief that the country's instalment sales are mounting steadily. The survey is being conducted so that store executives may be equipped with complete and accurate facts which will enable them to steer clear of the "Danger zone" in instalment sales.

The study is being conducted by a committee under the chairmanship of Ben S. Wright, credit manager, La Salle & Koch Co., Toledo, and will be presented by him at the N.R.D.G.A. mid-year convention in Chicago in June.

Among things being checked in the survey are down payment, minimum monthly payment, maximum terms, and the per cent of carrying charge leveled. Stores will also be questioned as to what was the average maturity of instalment selling plans in 1936 to determine whether a downward revision of terms is possible.

Laundry equipment, plumbing supplies, and oil burners have been added to the list of commodities sold through deferred payments, largely as a result of increased demand caused by various housing plans such as Federal Housing Administration.

Certain statistical aspects of deferred-payment selling already have been gleaned in a credit department operating study, which is now being tabulated for release in the near future. These include figures on per cent of increased deferred payment sales in the department store field, ratio of deferred-payment sales to total store sales, number of contracts written, bad debt losses, collection percentages, repossession percentages, and average deferred payment purchase per customer.

### Pratt Furniture Co. Opens Norge Appliance Dept.

SPOKANE, Wash.—Pratt Furniture Co. has opened a Norge electric appliance department which will be managed by Walter J. Simmonds, assisted by Fred Avey and John O'Leary.

Until recently, Mr. Simmonds was refrigerator sales supervisor for Tull & Gibbs, local appliance distributor and dealer. Both Mr. Avey and Mr. O'Leary were formerly connected with Holly-Mason Co. and Marshall-Wells.

Pratt Furniture's Norge display includes a completely equipped all-electric kitchen.

### Vowel Furniture Co. to Handle Crosley Line

WICHITA, Kan.—Vowel Furniture Co. has added an electrical department which will handle Crosley refrigerators and radios. Otto W. Taylor, veteran of more than 20 years of electrical merchandising, will manage the department.

### Cave Sponsors 2-Day Meeting For Indiana Gibson Dealers

INDIANAPOLIS—Paul E. Cave, president of Federal Home Equipment Co., newly appointed Gibson distributor in this territory, recently sponsored a two-day meeting for Gibson dealers from 61 Indiana counties at Hotel Antlers here.

Allen Dunlap, Gibson's midwest sales manager, outlined the company's selling program for the spring season.

### Chicago Dealer Gives Dish Set with Each 6-Ft. Refrigerator

CHICAGO—Carson Pirie Scott & Co., Apex refrigerator dealer here, has announced an offer of 11 pieces of crystal glass refrigerator equipment free with each purchase of a 6-cu. ft. Apex refrigerator at \$129.50.

The special promotional campaign was advertised in a Chicago tabloid at the beginning of the campaign.

Included in the 11-piece set are a krisperette, kontanerette, two five-jar arrangements for dessert service, a two-piece butter dish, beverage, and a utility bowl.

Carson's also uses a new advertising treatment in telling of its no-down payment plan. "You give considerable time and consideration to the purchase of a refrigerator. It is no more than right that we give you time to pay for it," says the store.

### Macy's to Finance Major Appliance Sales

NEW YORK CITY—Breaking its former strictly cash policy, R. H. Macy & Co., department store, has announced application of a finance plan to household appliance sales of \$200 or more.

Morris Plan Industrial Bank is co-operating with the department store on the new project, and will circularize 250,000 of its clients with the new plan's details, it is reported.

### Seidenbach's Opens Suburban Tulsa Branch Store

TULSA, Okla.—Seidenbach's department store has opened a suburban store in connection with its main electrical appliance department. Operating as Seidenbach's Specialty Store, the branch handles refrigerators, radios, gas and electric ranges, washers and ironers, gifts, and small appliances. A complete rental library also is included. Roy Myers is manager.

### Indianapolis Group Makes Pledge on Advertising

INDIANAPOLIS, Ind.—A pledge for truthful and accurate advertising and fair selling practices is being given to the people of Indianapolis by members of the Indianapolis Electric Appliance Dealers Association through advertisements in the local press.

Dealers whose signatures are affixed to the advertisements are:

L. S. Ayres & Co., A. C. Radio Electric Shop, Acme Electric Co., Banner-Whitehill Furniture Co., The William H. Block Co., Chandler Electric Co., Colonial Furniture Co., Economy Radio Shops, Electric Home Appliances, Ellwanger Electric Co., Fountain Square Furniture Co., Fisher Brothers Electric Co., Guarantee Tire & Rubber Co., Gordon Radio-Electric Co.

The Geiger Co., Home Equipment Co., Home Radio & Electric Service, Indianapolis Power & Light Co., Kempler Radio Co., Chas. Koehring, Leslie Appliance Sales Co., Pearson Co., Inc., People Outfitting Co., Pearson Norge Sales Co., Reimer Electric Co., Rinne Musical Instrument Co., The Sanborn Electric Co., Sears Roebuck & Co., Stewart's Radio, Inc., H. M. Stradling Electric Co., Taylor Radio Co., Inc., Universal Electric Co., Vonnegut Hardware Co., H. P. Wasson & Co., Inc.

### Hackermann and Buettner Accept New Positions

BALTIMORE—Irvin Hackermann, formerly refrigeration manager of Mayer's department store, has been appointed manager of the electrical appliance department of Isaac Benesch & Sons furniture store, to succeed August A. Buettner, who resigned to join the sales staff of Baltimore Gas Light Co., Universal distributor.

### Modern Radio Co. Opens Shop In Hartsville, S. C.

HARTSVILLE, S. C.—Modern Radio Co. has opened for business here, handling electric refrigerators and radios.

### 13 Cumberland Dealers Hold Refrigeration Style Show

CUMBERLAND, Md.—Thirteen Cumberland dealers sponsored a mechanical refrigeration "style show" recently, featuring special displays in their individual showrooms. The seven-day show was announced by a special 12-page section in the local press.

Participating dealers were:

Beneman & Sons (Leonard); C. & A. Gas Co. (Electrolux); Cumberland Electric Co. (Norge); Furniture Hall (Stewart-Warner); The Gas & Electric Co. (Grunow); Hafer's Furniture Stores (Crosley); Kline Furniture Co. (Leonard); S. T. Little Jewelry Co. (Universal); People's Furniture Store (Sparton); Potomac Edison Co. (Frigidaire); The Reitz Co., Inc. (General Electric); Rosenbaum's (Kelvinator); Sears, Roebuck & Co. (Coldspot).

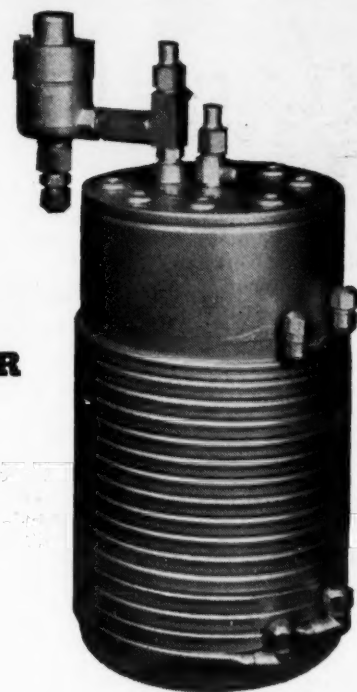
### Appel Trades Refrigerator for \$200 Worth of Haircuts

DUBUQUE, Iowa—Haircuts and shaves, \$200 worth of them, were what a local barber agreed to pay Dealer Appel, of Appel Higley Electric Co., General Electric retailer, for a B6-37 refrigerator.

Unfortunately, Mr. Appel, who is better at making sales than growing hair, has a tendency toward baldness. He realized that it would take him a long time to personally take out the refrigerator's purchase price in trade.

To facilitate collection, all members of the Appel and Higley families together with the sales force have been visiting the barber shop.

**4 KINDS OF BEER**  
**2 KINDS OF WATER**  
**ALL FROM**  
**1 COOLER**



Temprite coolers are now available for cooling four kinds of beer... water... and seltzer water all in the same cooler. • Even though each brand of beer may come into the cooler at a different temperature, the exit temperature is 40°. • Write for illustrated bulletin B-1.

### TEMPRITE PRODUCTS CORPORATION

1349 East Milwaukee Ave., Detroit, Michigan

ORIGINATORS OF INSTANTANEOUS LIQUID COOLING DEVICES

# Announcing

## the New TYPE M125

### MAGNETIC STOP VALVE

#### For Air Conditioning and Refrigeration




- Sturdy Construction
- Packless Tight Seating
- Power Consumption—13 Watts
- Capacity—5 Ton Freon, 10 Ton Methyl Chloride, at 3 lb. P.D.
- Parts Exposed to Flow are Forged Brass and Stainless Steel
- Can be used for Refrigerants—Brine—Oil—Water or Air
- For Alternating or Direct Current

For Complete Information ask for Bulletin No. 158

Used for temperature control of parallel units.

● Possible applications of the new M125 magnetic stop valve.

Used as an automatic shut-off in main line liquid supply.

Used as liquid level control on shell and tube cooler.

Capacity control of air conditioning evaporators.



## ALCO VALVE COMPANY, INC.

2620 Big Bend Blvd.  
ST. LOUIS, MO.



# How to Select and Install Air Conditioning Systems

By T. H. Mabley

## Case No. 14 Restaurant and Bar

Often for the purpose of simplified control and to fit equipment into a building the use of two air conditioners is advisable. Such is the case with this problem, which involves a restaurant and cocktail bar.

The layout of the establishment is actually broken up into two separate rooms, in addition to the kitchen. The dining room is connected with the small room through an arched doorway. This room, which serves as an entrance room for the entire space, might also be a short order lunch room or coffee shop operated as part of the restaurant.

The air-conditioning problem involves the functions of temperature and humidity control during the summer, ventilation and circulation, and some degree of air cleaning.

The present heating system is adequate and humidification for winter operation actually would be considered an unprofitable luxury in this type of business.

### CONDITIONS DESIRED

In this locality the weather bureau records indicate that accepted outdoor design conditions for summer would be 93° dry bulb and 75° wet bulb.

In this class of business 78° dry bulb and 50% humidity would be the corresponding inside conditions that might be desired in the dining room, while in the smaller room 80° dry bulb and 50% humidity would be an entirely satisfactory design indoor condition.

The reason for the slight difference between the two areas lies in the comparatively brief period of occupancy in the small room, and further that first-class performance in the dining room is desired, in accordance with the owner's service policy.

Ventilation in this particular case

is very important; a considerable amount of tobacco smoke and food odors will have to be disposed of, and since no efficient filter has yet been produced to remove smoke from the air economically it will be necessary to reduce the foreign matter by dilution of the air in the conditioned space with fresh air from outdoors.

### FRESH AIR NEEDED

The quantity of fresh air is important from the standpoint of design conditions and calculation of equipment and duct sizes. If 25 c.f.m. per person is allowed it will more than offset the normal infiltration and considering the inside conditions provide a fair quantity of outside air.

This amount will be used when the other factors in the total load are as high as designed for, but if one or more of the other factors do not come up to the design load value the fresh air may be increased to assure proper ventilation.

In other words, at such times as either the occupancy, light or sun loads are not as high as specified in the design load calculations, or when the outside temperature is considerably lower than 93°, more than the 25 c.f.m. per person of fresh air can be introduced without overloading the equipment.

Provision should be made in the system layout for handling up to 100% fresh air by each unit.

### HEAT CALCULATIONS

Next step is the actual calculation of the heat gain load on the system. Simple calculations show a Total Heat Gain of 138,000 B.t.u. for the small room and 232,000 B.t.u. for the larger space.

These loads are based on maximum conditions for each space and should be used for selection of the air-conditioning units. However, in selecting the compressor equipment allowances will be made so that these loads do not reach a peak simultaneously, and for this reason the maximum combined load is 324,000 B.t.u.

### TWO SYSTEMS LOGICAL

A study of the physical details of

the building demonstrates the most logical arrangement to be one providing two separate conditioners, one for each area to be conditioned. This arrangement has many advantages which more than offset the additional cost of equipment as compared with a single-unit installation.

The control in the two-unit arrangement is very simple; furthermore, difficult and costly cutting through walls and the providing of extra space for ducts also is eliminated. It appears practical therefore to use a single refrigeration compressor connected to two air-conditioning units.

Air conditioner for the small room will be hung from the ceiling in a space above the washrooms and will discharge air directly from a large grille located in the rear wall of the space. Two recirculation grilles will be installed in this same wall. All three grilles should be of the same size to give a neat appearance.

### INTAKE LOCATION

The fresh-air intake will be located in the side wall of the building as close as possible to the unit. A damper operated by a chain brought down to a point accessible from the floor will be used to control the proportion of fresh and recirculated air.

The air conditioner selected to condition this space will have a belt-driven blower, direct-expansion cooling coils, steam-tempering coil to assure a minimum discharge air temperature, and a viscous-coated filter bank.

The tempering coil will be connected to the central steam system and a thermostatically controlled motor valve will control the steam supply to the coil. Thus the air will be heated as it passes through the unit at such times that the system is being used for ventilation purposes with the outdoor air coming into the system, lowering the discharge air temperature to a point that might cause objectionable drafts or excessive load on the heating system.

In addition to providing an ample fresh air supply, some mechanical means should be employed for exhausting the air, and thus a propeller-type exhaust fan is installed in the only available location, over the front entrance.

### SPACE AT PREMIUM

For the large dining room it would be impractical to try using any

## THE NEW ZENITH REFRIGERANT FILTER

... FOR SULPHUR DIOXIDE FREON OR METHYL CHLORIDE REFRIGERATORS



Engineered Refrigerant Filters in a variety of sizes for varying capacities.

FINE SPACINGS THAN ANY ASBESTOS SACK OR WIRE SCREEN

### LOWER PRESSURE DROP!

### BETTER PROTECTION!

Special features include: Patented Element—Easily and Quickly cleaned—Easy to Install—Insures Positive Protection from Dirt in the Refrigerant Liquid—Corrosion-proof, Leak-proof and Ample Capacity. Write for full details.

ZENITH CARBURETOR CO.

Subsidiary  
BENDIX AVIATION CORP.  
Detroit, Michigan

## For the Air-Conditioning Distributor-Contractor

This series of articles by T. H. Mabley, chief engineer of Mechanical Heat & Cold, Inc., Detroit air-conditioning distributor, is written for the use of the air-conditioning distributor and contractor in solving problems of equipment design and installation.

Case No. 14 which appears on this page discusses the methods for solving problems involved in making a dual installation in a restaurant and cocktail bar.

Compilation of Mr. Mabley's articles into a pamphlet for ready use by an air-conditioning contractor or dealer is being started by the News. Announcement will be made in the News as soon as these pamphlets are ready for distribution.

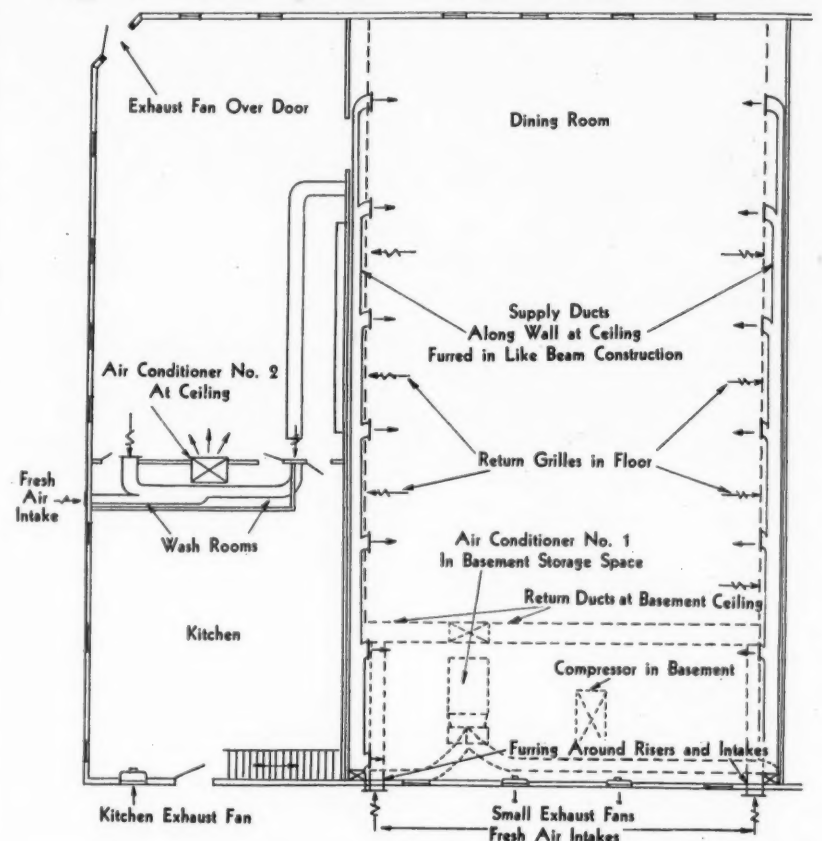
This series of case studies is entitled "How to Select and Install Air-Conditioning Equipment." Each study includes an illustration of the

method of making the installation, and in some cases, tables to be used in figuring the load requirements or some other factor for the specific job.

The case studies which have appeared in AIR CONDITIONING AND REFRIGERATION NEWS are:

Case No. 1, A Single Office (Jan. 6); No. 2, A Conference Room (Jan. 13); No. 3, Residence System with Room Cabinets (Jan. 20); No. 4, Typical Commercial Application—A Shoe Store (Feb. 3); No. 5, A Beauty Parlor (Feb. 24); No. 6, A Coffee Shop (March 3); No. 7, A Process Job (March 10); No. 8, A Doctor's Suite (March 17); No. 9, Central System for a Group of Offices (March 31); No. 10, A Residence (April 7); No. 11, Upper Floor of a Residence (April 14); No. 12, A Men's Apparel Store (April 21); and No. 13, A Women's Dress Shop (April 28).

Fig. 1. Dual System in Restaurant and Bar



space within the conditioned room for the equipment, as almost every foot of the space is used for serving customers and such large heavy equipment as would be necessary for this room would appear too large to be mounted at the ceiling.

For these reasons a space is selected in the basement under the rear of the dining room. Two main supply ducts will be installed along the length of the two opposite walls and the ceiling. After these ducts are installed they may be concealed by a furring which will give the appearance of a beam construction.

Two risers will be necessary in each of the rear corners. The furring of each of these risers also will include a fresh air intake duct.

By making two intakes instead of one we can cut the necessary area of each in half and at the same time permit the furred risers to be of the same size, thus maintaining the symmetry of the room interior.

### RETURN AIR

Return air will be taken off at the floor through registers installed along the same walls as the supply ducts. The main supply and return trunks for the system will be hung from the basement ceiling.

In addition to making provision for a fresh-air intake, two small exhaust fans should be installed at the top of the rear windows.

The air conditioner necessary will be of the built-up type consisting essentially of a single inlet blower with belt drive, direct-expansion

cooling coils, and viscous-coated filters.

A tempering coil will be mounted near the ceiling in the main supply duct leading from the conditioner. The purpose of this coil location is to assure proper height for the return of the condensate from the coil.

The refrigeration compressor for the entire system may be located at a point near the largest conditioner unit so that the biggest refrigerant lines will have the shortest runs.

### REFRIGERANT LINES

In selecting the sizes of the refrigerant lines reference can be made to a chart such as shown in Fig. 2.

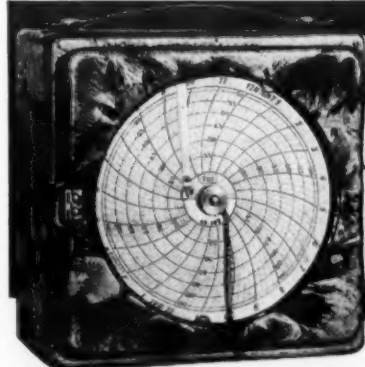
There are several different types of these charts used for various purposes and various refrigerants. This chart, for example, includes allowances for the pressure drop of five elbows for every hundred feet of pipe in addition to the normal straight pipe friction loss.

Referring to the problem at hand the main suction line carrying the full output from the machine to a take-off point near the unit is about 10 feet in length and must handle the refrigerant to produce 324,000 B.t.u. or 27 tons of cooling. From the chart it can be seen that either a 2½-inch or 3-inch inside diameter pipe may be used. Since only a small pressure drop is permissible we will play safe and use the 3-inch pipe for this run.

From the same chart other suction line sizes can be selected. The run

(Concluded on Page 17, Column 1)

## You need this TAG MINIATURE RECORDER In Selling or Servicing



A record of temperature is indispensable in checking the performance of refrigeration and air conditioning equipment. By a permanent written temperature record on a 4½ inch chart, this small but precise Recorder assists in sales and service work. It is easy to carry, only 5½ square by 4½ deep and weighs less than 3½ lbs. Write for Catalog No. 1136-25.

ASK YOUR JOBBER ABOUT TAG CONTROLS AND TEST EQUIPMENT

C. J. TAGLIABUE MFG. CO. 550 PARK AVE. B'KLYN, N.Y.

**AEROFIN**  
Heat Exchange Surface  
**PROVED PERFORMANCE**

Aerofin Cleanable Tube Unit with Removable Header

Aerofin Direct Expansion Unit Centrifugal Header Type

Universal Aerofin

Aerofin Continuous Tube Water Coil

**AND A COMPLETE LINE For Every Requirement**

AEROFIN light-weight fan system heating and cooling surface offers just about everything that architects, engineers and heating contractors have always wanted. For more than fifteen years Aerofin has been the standard by which heat exchange surface is judged. If it is Aerofin it is the ultimate in service, satisfaction and reliability. That is why it is the dependable choice of men engaged in air conditioning, heating or ventilating.

More Aerofin heat exchange surface is sold than any other type—more than 45,000,000 feet of it since Aerofin was first introduced. Forty-five million feet of experience is in the manufacture of Aerofin.

Investigate Aerofin—today. Send to our home office or to any of our branch offices for descriptive literature. Take advantage—without obligation—of the service our engineers can render. Their prompt effective technical cooperation on any problem is at your disposal.

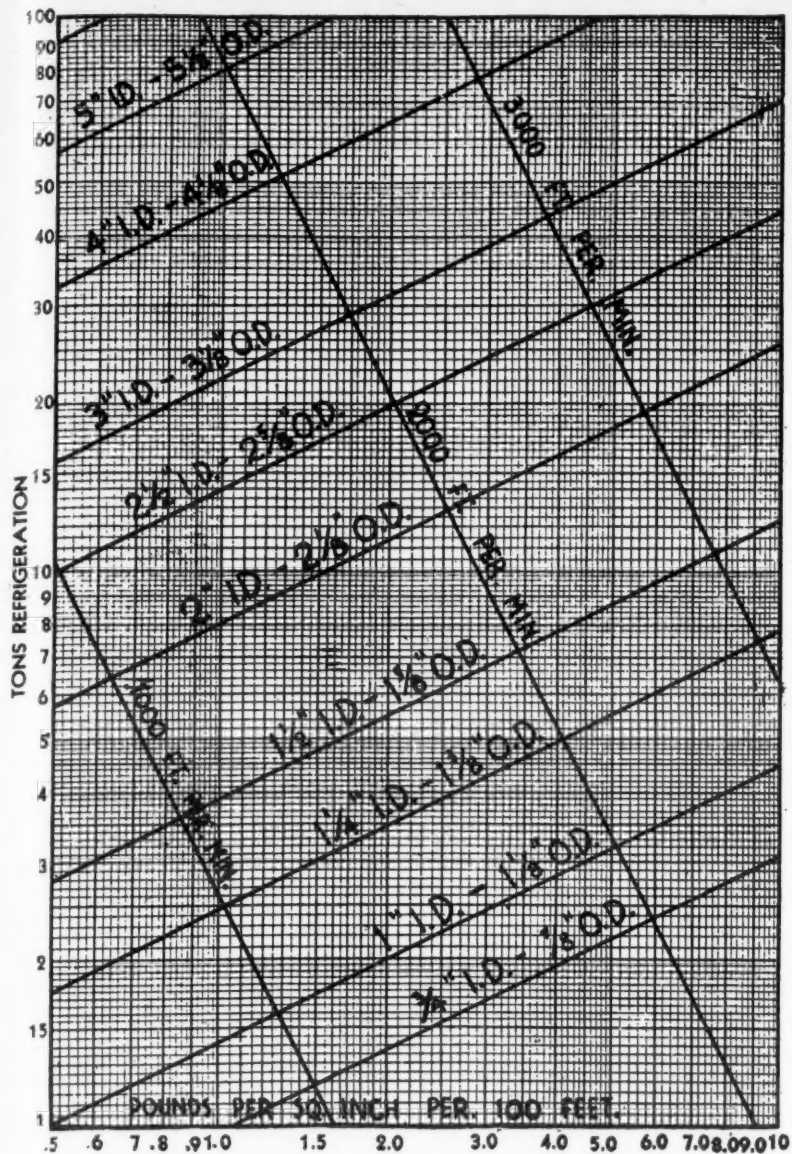
**AEROFIN**  
is sold only by  
Manufacturers  
of Nationally  
Advertised  
Fan System  
Apparatus.  
List upon Request

**AEROFIN CORPORATION**  
850 FRELINGHUYSEN AVENUE  
NEWARK, N. J.

Chicago • Detroit • New York • Philadelphia • Dallas • Atlanta



Fig. 2. Refrigerant Line Size Chart



### Data for Determining Refrigerant Line Size

(Concluded from Page 16, Column 5) to the small unit, while carrying only 11½ tons, will have to be 2-inch pipe to keep the pressure drop within the one-pound limit. Since the branch to the larger conditioner is very short a 2½-inch pipe will handle the load.

The liquid lines can be much smaller as they are carrying only a liquid rather than a gas as is the case with the suction lines. The following data is approximately the size lines that would be recommended for a normal installation where the runs do not exceed 100 feet:

1-3 tons	3/8 inch I.D.
3-7 tons	1/2 inch I.D.
7-12 tons	3/4 inch I.D.
12-30 tons	1 inch I.D.

From this data we can determine that the main liquid line should be 1 inch and the connection to the large conditioner the same size. The liquid line for the smaller unit may be 3/4 inch.

### Fort Smith's Boston Store To Be Air Conditioned

FORT SMITH, Ark.—Air-conditioning equipment of 130-ton capacity has been contracted for by Boston Store, local department store, to condition its first and second floors. A 15-ton system also has been ordered by Davis Drug Co.

Installation work on these jobs is to commence immediately, and is expected to be completed before hot weather sets in.

### Frick Freon System for 9-Story Tulsa Building

TULSA, Okla.—Contract for air conditioning the nine-story Palace building here has been awarded to Dixie Heating & Ventilating Co., of Dallas and Houston, Tex. Kribs & Landauer, Dallas engineers, will supervise the installation.

A Frick refrigeration plant of the newest Freon type will be located in the basement to supply chilled water to two dehumidifiers. One dehumidifier will serve a clothing store located in the building, while the other will serve the offices. Individual office control will be furnished.

Absolute precision is imperative in every step of production of A-P Thermostatic Expansion Valves.

Automatic Expansion Valve Company

### Idle Boilers, Low Gas Rates, Lead to Choice Of Steam-Jet System

TULSA, Okla.—Said to have been selected in preference to other methods of cooling because of low gas rates for generation of steam and the existence of ample boiler capacity heretofore idle in summer, the steam-jet air-conditioning installation scheduled to be in operation not later than June 1 in the Kennedy building here is of particular interest to the air-conditioning engineer because it illustrates the way in which "circumstances alter cases" in the selection of methods of air conditioning.

The Kennedy building, located at Fourth and Boston Sts., is a 15-year-old structure of steel and reinforced concrete. It is 10 stories high and contains approximately 177,000 sq. ft. of rentable area, consisting of a cafeteria in the basement, barber shop, stores, and brokerage offices on the first floor, and offices on the nine floors above.

Based upon outside design temperatures of 100° F. dry bulb and 75° F. wet bulb, and inside design temperatures of 80° F. dry bulb and 67° F. wet bulb, the total cooling load on the building was estimated to be 360 tons of refrigerating effect.

Before deciding upon the type of cooling system to recommend, the following types of systems were studied by Natkin & Co., local representatives for Westinghouse, according to Bert Natkin, local manager.

Types of systems considered were:

A. Electric motor-driven refrigerating compressors, using electric current at 7 to 9 mills per kwh.

B. Gas engine-driven refrigerating compressors using gas at 12½ cents per 1,000 cu. ft. (1,050 B.t.u. gas).

C. Gas engine-driven electric generator unit with electric motor-driven refrigerating compressors. This unit would use gas at rate stated above, and would supply current for elevator and lighting service in addition to air-conditioning equipment.

D. Steam-jet equipment.

First cost was found to be in favor of steam-jet equipment, because any two of the three existing 72-inch x 18-foot, 150-hp. Kewanee gas-fired boilers would have ample capacity for supplying the 27 lbs. per minute of steam at 80 lbs. gauge pressure required by the Westinghouse steam-jet apparatus per minute per ton of refrigerating effect.

Since these boilers were not in use during the summer, and since a large amount of oil is held in reserve for operating them with oil burners in case of possible shortage of gas supply, their use was attractive not only because it would make use of equipment heretofore idle during the summer, but also because the possibility of burning either gas or oil would make them doubly dependable.

From the analysis of operating costs, the overall operating cost of the gas-fired boilers using natural gas at 13½ cents per thousand cu. ft. of 1,050 B.t.u. gas, was shown to be only 25% of the operating cost of motor-driven compressors using electric current at 7 to 9 mills per kwh. Furthermore, this summer demand would reduce the winter gas rates also, so that a reduction in heating costs would result.

The cooling unit used consists of a vacuum cooler which is 7½ feet in diameter by 22 feet long, and a condenser 5½ feet in diameter by 23 feet long. Four steam-jet nozzles are used, two of which are to operate under automatic control and two under manual control.

The weight of the entire unit is approximately 90,000 lbs. The cooling unit and cooling tower will be located in an adjacent building. The cooling tower is a Lillie-Hoffman 2,000 g.p.m., forced-draft unit, and will be installed above the cooler.

The water cooled by the "boiling" which takes place in the cooler at the low-boiling temperatures of high vacua, is circulated by centrifugal pumps through the air-conditioning units located on the various floors.

In addition to cooling in summer, the air-conditioning units are arranged to supply air for ventilation during the entire year, and to humidify the air supply when needed.

The air will be distributed through ducts concealed above acoustically treated suspended ceilings, and will be supplied to the rooms through overhead openings.

Recirculation of air will be accomplished by venting the air from the room directly into the corridors through grilles located in the lower panels of the doors. From the corridors, the air will be drawn into the air-conditioning units.

Operation will be fully automatic, each floor being divided into six independent zones. The condition in each zone will be under the control of the thermostat and humidistat within it, so that the refrigeration to each zone will be varied automatically to meet load variations as sun effect and/or the occupancy factor shift from zone to zone.

It is claimed that in this way, comfort conditions will be maintained automatically in all portions of the building regardless of changing conditions.

It has been estimated that approximately 2½ million cu. ft. per hour of gas will be used by the installation, and that the connected electric load of all pumps and fans will be in the neighborhood of 225 hp.

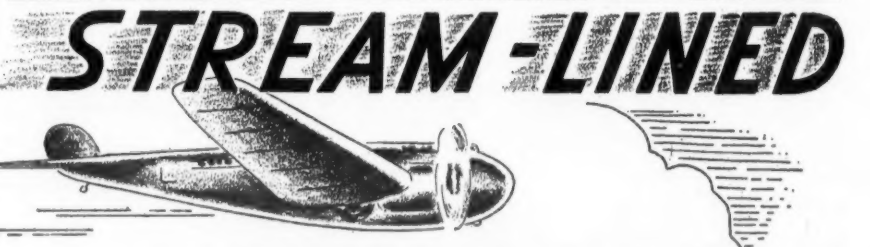
## AIR CONDITIONING DATA

The following is a continuation of a survey giving complete data on the air-conditioning installations that were made through 1936 in some cities of this country. Covered in this issue are jobs installed in the territory of Gulf States Utilities Co., Beaumont, Texas.

Information published includes name and type of establishment where air-conditioning systems were installed; size of the installation in tons of refrigeration, and horsepower rating; year in which the installation was made; and the name of the equipment used.

### Where Air Conditioning Has Been Installed In Beaumont, Texas Territory

Name of Customer	Make & Installer	Tonnage	Hp.
<b>Banks</b>			
First National Bank, Beaumont (1936).....	Carrier (Straus-Frank)	60	85
<b>Offices</b>			
G.S.U. Co., Port Arthur (1935).....	Carrier (Straus-Frank)	22	28
G.S.U. Co., Beaumont (1935).....	G-E (Edmundson Co.)	60	77
Norvell-Wilder, Beaumont (1934).....	Baker (Baker Ice)	7	8
<b>Restaurants</b>			
Service Cafe, Beaumont (1935).....	Frigidaire (Reed Co.)	8	8
Black Cat Cafe, Beaumont (1934).....	York (York Ice)	25	36
Edson Hotel Coffee Shop, Beaumont (1929).....	York (Dixie Htg. & Vent.)	35	47½
La Salle Coffee Shop, Beaumont (1936).....	Baker (Baker Ice)	12	18
New England Cafeteria, Beaumont (1936).....	Carrier (Straus-Frank)	12	18
Sabine Hotel Cafe, Port Arthur (1936).....	Carrier (Straus-Frank)	12	18
<b>Stores</b>			
Liggett's Drug Store, Beaumont (1936).....	Carrier (Straus-Frank)	15	19
The Fashion Store, Beaumont (1935).....	Frigidaire (Reed Co.)	20	29
Worth's, Inc., Beaumont (1934).....	Frigidaire (Reed Co.)	6	8
The Reed Co., Beaumont (1935).....	Frigidaire (Reed Co.)	10	14
Baker Shoe Store, Beaumont (1936).....	York (York Ice)	8	13
<b>Theaters</b>			
Jefferson Theater, Beaumont (1927).....	Carrier (Carrier)	150	185
Liberty Theater, Beaumont (1935).....	Carrier (Straus-Frank)	60	76
Strand Theater, Port Arthur (1936).....	York (York Ice)	120	135
Creighton, Conroe (1936).....	York (York Ice)	50	58
<b>Barber Shops</b>			
Terminal, Port Arthur (1935).....	Frig. (Dismukes Pib. Co.)	4	5
<b>Residences</b>			
J. H. Phelan, Beaumont (1929).....	Bruns-Kroes	25	32½
J. C. Wilson, Beaumont (1936).....	York (York Ice)	30	38
W. M. Carroll, Beaumont (1935).....	G-E (Edmundson Co.)	1½	2
George Sells, Orange (1925).....	Carrier (Straus-Frank)	½	1
A. Hollowman, Lake Charles (1936).....	G-E	3	3½
<b>Public Buildings</b>			
Jefferson County Ct. House, Beaumont (1935).....	Baker (Baker Ice)	10	12
City Auditorium, Beaumont (1936).....	Frick (Dixie Htg. & Vent.)	200	263½
<b>Miscellaneous</b>			
Anahuac Court House (1936).....	Frick (Dixie Htg. & Vent.)	100	118
Gore & Wolf, Dry Cleaners, Beaumont (1934).....	York (York Ice)	6	8



# STREAM-LINED DELIVERY

from 82 DISTRIBUTING POINTS...

Modern business calls for fast delivery as well as perfection of product.

In ESOTO and V-METH-L you find both these. Streamlined delivery from 82 distributing points throughout the world... and refrigerants that are carefully checked before shipping... pure, clean, and absolutely dry.

The coupon will bring a quick answer.

Virginia Smelting Company, West Norfolk, Virginia  
I am interested in receiving free literature on electrical refrigeration.  
Name .....  
Address .....  
City or Town..... State.....



**VIRGINIA SMELTING CO.**  
WEST NORFOLK, VIRGINIA

## LONGER LIFE

This new Automatic Expansion Valve, product of Sylphon's 37 years' experience, maintains constant evaporator pressures for long periods... without adjustment or other attention. The non-metallic, corrosion-proof valve poppet can't pit or score, therefore always closes off positively during its entire life. Poppets and seats are renewable. Ample capacity filter, easily removed. No rubber breather cap. Moisture-proof. For Methyl Chloride, Freon and Sulphur Dioxide. Bulletin O-5000.

FULTON SYLPHON COMPANY  
Refrigeration Division  
Knoxville Tennessee



**Sylphon**  
AUTOMATIC EXPANSION VALVE



## Operating Characteristics of Air-Cooled Condensers

By Joe Askin, Chief Engineer, Fedders Mfg. Co.

A SIMPLE refrigeration system could be constructed by taking a container full of a volatile fluid known as a refrigerant and placing it in a box in which it is desired to cool the contents.

Heat transfer from the relatively warm box to the fluid would cause a portion of the fluid to boil away or evaporate. The evaporating fluid could be carried away outdoors through a flue pipe or a chimney.

As a result of the evaporation of the refrigerant, the temperature of the box would decrease and a refrigeration effect would be produced. Such a simple refrigerator is illustrated in Fig. 1.

But of course it has been found to be more economical, more convenient, and more practical to take the vapor into which the liquid refrigerant has expanded and to change it back to its liquid connection. To do this it is necessary to recompress this vapor and then to cool it, and if cooled to any temperature below its critical temperature it would then change back to a liquid.

The critical temperature of a fluid is the temperature above which the fluid will not change to a liquid from the gaseous state, no matter how much pressure is applied upon that gas or vapor.

Each refrigerant has a different critical temperature. The higher the critical temperature the easier it is to condense the vapor to a liquid. Table 1 gives the critical temperature of some of the most common refrigerants in use today.

It was noted before that it is necessary to compress the evaporated vapor as well as to cool it. In

order to cool this vapor it is necessary to allow it to flow from the compressor to a cooling coil known as a condenser.

The compressor, condenser, and receiver tank change the simple refrigeration system mentioned previously to a mechanical refrigeration system. In addition, a metering device is necessary in order to feed liquid into the evaporator at the same rate at which it evaporates so as to keep the conditions stable.

A motor is necessary to drive the compressor, and a fan to cool the air passing by the condenser fins. In

Table 1

(Critical Temperatures of Various Refrigerants)

Sulphur Dioxide	315° F.
Methyl Chloride	289° F.
Freon-12	233° F.
Ammonia	271° F.
Carbon Dioxide	88° F.
Ethyl Chloride	261° F.
Isobutane	273° F.

addition, to make the machine an automatic mechanical refrigerator, a thermostat is necessary to start and stop the motor in order to keep the box temperature more or less constant.

It is logical that the condenser be one of the necessary elements of a mechanical refrigeration system. As the gas is compressed in the compressor it becomes heated. Likewise, the refrigerant vapor in being compressed picks up what is known as "heat of compression" or "superheat."

Before any of the refrigerant vapor can begin to condense to a liquid it is necessary to remove the superheat from the vapor. This is done in the upper portion of the condenser.

Air is forced past the finned condenser surface by means of a fan.

Fig. 1. A Simple System

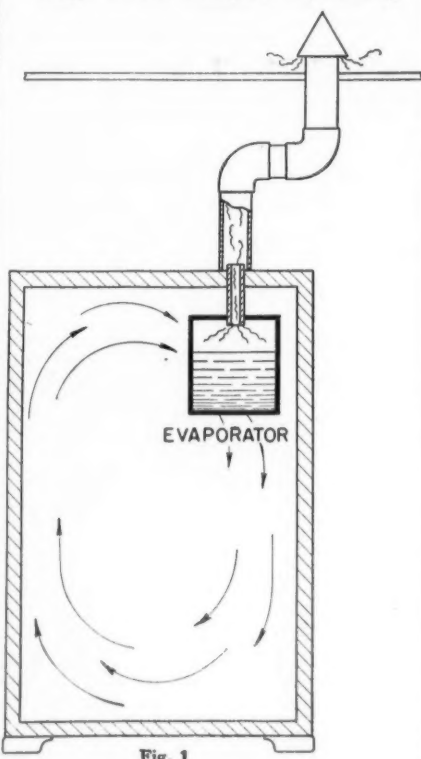


Fig. 1

The compressed gas being at a higher temperature than the air in the room, heat is transferred from the warm gas to the atmospheric air.

As soon as all of the superheat has been removed in the upper portion of the condenser, the continued removal of heat from a saturated vapor results in condensing the vapor to a liquid. This removal is accomplished by the relatively cool air passing by the finned portion of the condenser.

The heat removal of the condenser under ordinary circumstances is from 20 to 30% greater than the heat absorption of the evaporator. This difference is due to the heat resulting from the conversion of mechanical energy.

If this heat removal should go up to the point where it becomes 50% greater than the heat absorbed by the evaporator, then this is an indication that there is something wrong.

Fig. 2 shows the relationship between temperature and pressure for different refrigerants. A liquid refrigerant, being volatile, when kept in a closed container will release some of its fluid in the form of vapor. This vapor collects above the liquid in the container in a saturated state, and creates an internal pressure in the container.

For every temperature there is a corresponding pressure, and as mentioned beforehand, each type of refrigerant has its own vapor pressure characteristic, as illustrated in Fig. 2.

In general, in order to transfer heat from one object to another there must be a temperature difference between the two objects; or there must be a warm object and a cold object, and the flow of heat is from the warm object to the cold object.

In this case the warm object is the refrigerant in the condenser, and the cold object is the air passing by, which under all circumstances should be cooler than the refrigerant vapor within the condenser. The larger the condenser, or the greater the capacity of the condenser, is made by passing more air through it, the closer to room temperature will the refrigerant vapor become.

It is possible to carry the size of the condenser to extremes by trying to keep the condenser pressure extremely low. Fedders engineers have set a standard temperature differential of 24° F. between the refrigerant in the condenser and the air.

Table 2 shows recommendations of condensers from a Fedders catalog. These are based upon a face velocity of the air of from 400 to 500 feet per minute, and a temperature differential of 24° F.

A choice of condenser for each size of condensing unit and the selection should depend not only upon the air velocity, but also upon the operating suction pressure. High air velocity and low suction pressure mean that a smaller condenser may be selected to do the same job.

Fig. 3 illustrates a standard corrugated fin type of condenser, and Fig. 4 a typical straight fin type. Each type has certain distinct advantages, as well as disadvantages.

It has been stated that the temperature of the refrigerant is higher than the air temperature. It is not very easy in the field to measure refrigerant temperature, but by installing a gauge at the discharge

(Concluded on Page 19, Column 1)

## Two Types of Condensers

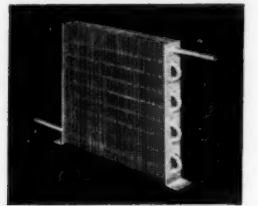
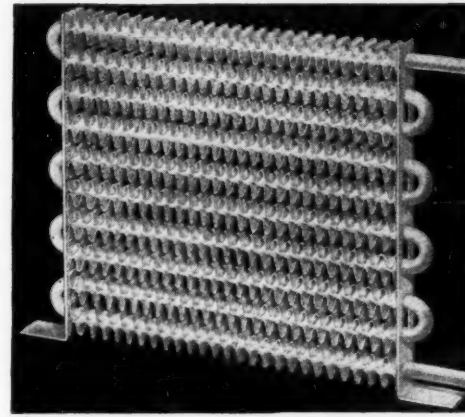


Fig. 3 (at the left) illustrates a corrugated fin-type condenser, and Fig. 4 (above) shows a typical straight-fin condenser.

Fig. 2. Pressure-Temperature Chart

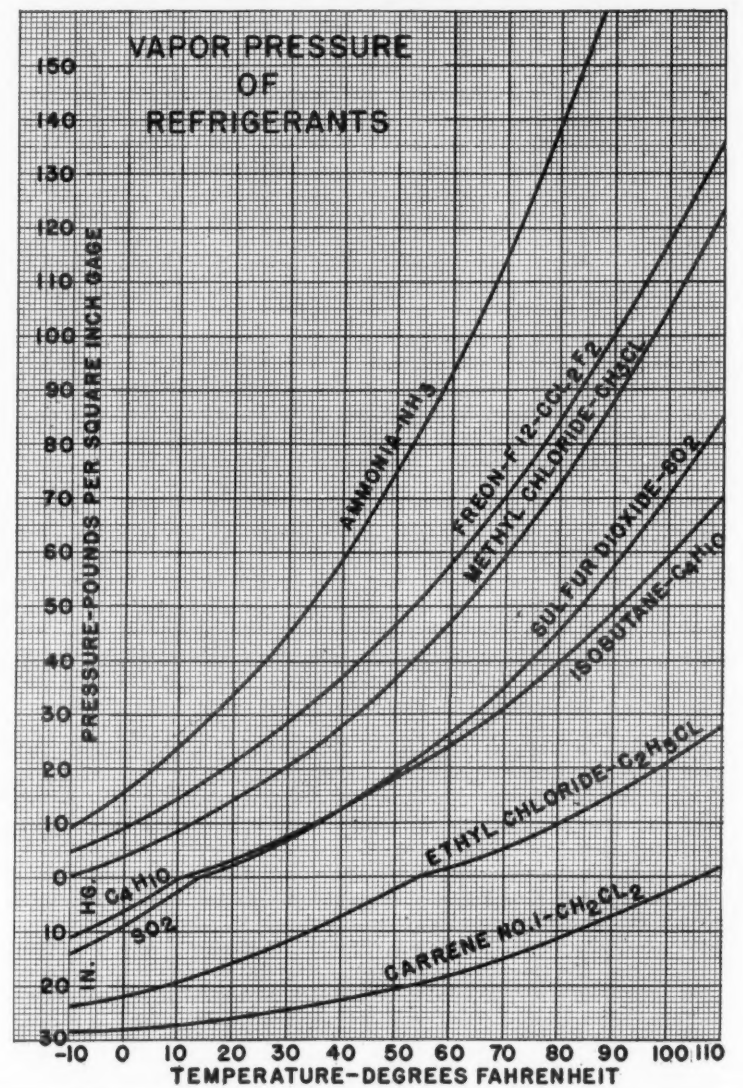
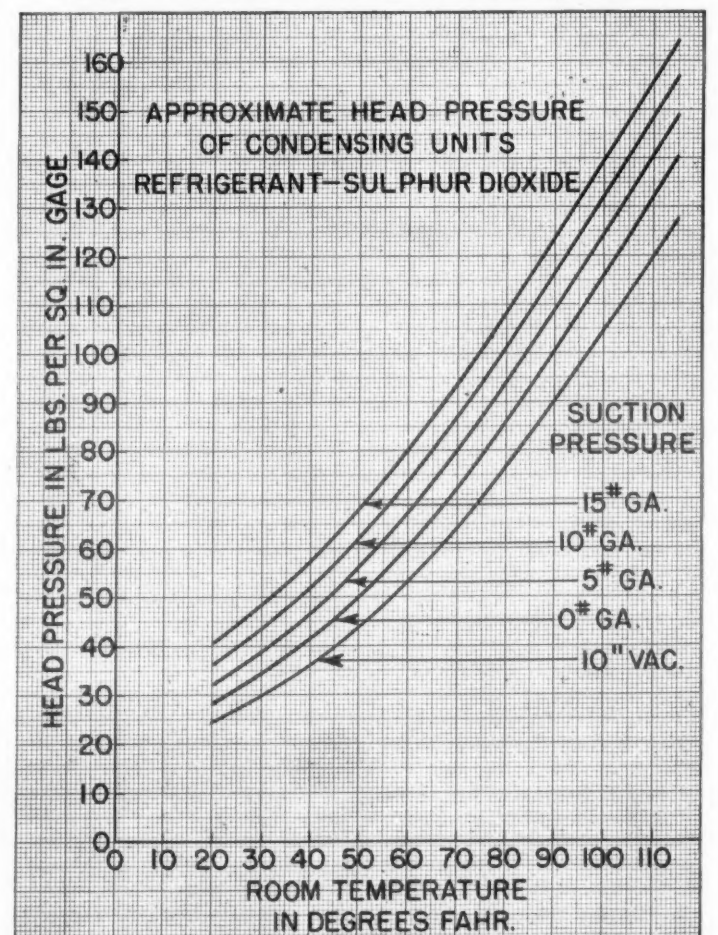
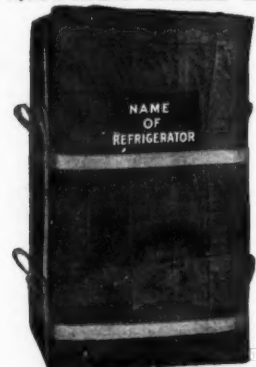


Fig. 5. Head Pressure for SO<sub>2</sub> Systems



## THE MASTERCRAFT ADJUSTABLE PAD AND CARRYING HARNESS FOR SAFE DELIVERY OF AUTOMATIC REFRIGERATORS

Pad and harness ADJUSTABLE to many sizes and styles of cabinets. Economical—Efficient. Sturdy constructed, easily applied. Name of refrigerator attractively lettered on pad without charge.



Pad (Adjustable) \$9.50 ea. Harness (Adjustable) \$6.00 ea.

The Pad and Harness are separate.

Individual carrying straps \$1.75 each and up. Write for 1937 Folder & Prices on entire Pad Line.

BEARSE MANUFACTURING CO. 3815-3825 Cortland Street, Chicago, Illinois

CONDENSERS  
COMMERCIAL EVAPORATORS  
DOMESTIC EVAPORATORS  
COMFORT COOLERS  
MARKET COOLERS  
AIR CONDITIONING SURFACE  
UNIT HEATERS  
BLAST HEATING SURFACE

**McCORD**  
REFRIGERATION AND  
AIR CONDITIONING  
PRODUCTS

CATALOGUES ON REQUEST  
McCORD RADIATOR & MFG. CO.  
DETROIT, MICHIGAN

## This Simple patent is the secret that has made a SILENT V-BELT . . . and here's the reason



When a straight-sided V-belt bends around its pulley there is tension on the top of the belt and compression on the bottom. This makes the side walls bulge outward—as shown in figure 1, below.

The Gates Belt is built with a patented concave side. The bulge, due to bending, simply straightens the concave side to a precise fit with the sheave groove as shown in figure 2.

This exact fit naturally prevents slipping. No slipping means a SILENT belt, a belt that wears longer, a belt that does not heat and therefore does not stretch.

### BELT GUIDE — FREE

The Gates Belt Guide is the recognized national authority on correct belt fit for ALL Refrigerators, Washing Machines, Pumps, Stokers, etc., etc. FREE from your Jobber or the GATES RUBBER CO., Denver, Colorado.

Write Today!

**GATES BELTS**

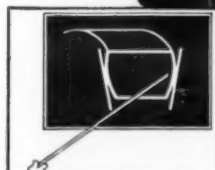
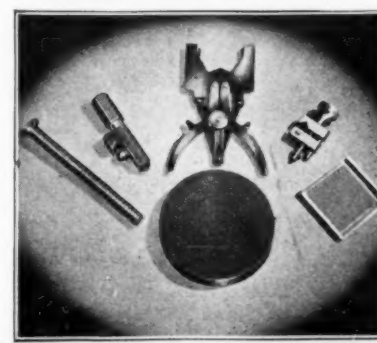


Figure 1



Figure 2.



## PERFECTION Service Tools are Certified to Excel

Ask for catalog covering complete line of Service Tools, Condensing Water Regulators, Compressor Parts, Valves and Fittings.

PERFECTION REFRIGERATION PARTS CO. HARVEY, ILLINOIS



Table 2. Recommendations for Condenser Sizes

High Side Size for which Condenser is Recommended	1/2 H.P.		3/4 H.P.		1 H.P.	
Model No.	P-260	P-280	P-320	P-360	P-400	P-401
Number of Tubes	26	28	32	36	40	40
Sq. Ft. Radiating Surface	23.2	26.72	57.15	64.30	71.42	78.56
Inlet Connection	1/4 Pipe Tap	1/4 Pipe Tap	3/8 Pipe Tap	3/8 Pipe Tap	1/2 Pipe Tap	1/2 Pipe Tap
Outlet Connection	1/4 Pipe Tap	1/4 Pipe Tap	3/8 Pipe Tap	3/8 Pipe Tap	1/2 Pipe Tap	1/2 Pipe Tap

High Side Size for which Condenser is Recommended	1 H.P.		1 1/2 H.P.		2 H.P.	
Model No.	P-402	P-440	P-480	P-481	R-32	
Number of Tubes	40	44	48	48	32	
Sq. Ft. Radiating Surface	93.82	103.0	112.0	131.0	225.0	
Inlet Connection	3/8 Pipe Tap	3/8 Pipe Tap	3/8 Pipe Tap	3/8 Pipe Tap	1/2 Pipe Tap	
Outlet Connection	3/8 Pipe Tap	3/8 Pipe Tap	3/8 Pipe Tap	3/8 Pipe Tap	1/2 Pipe Tap	

## Possible Causes of High Head Pressure Explained by Askin

(Concluded from Page 18, Column 5) shut-off valve of the compressor the discharge pressure (or condensing pressure) may be read.

An approximate idea of just what this pressure should be may be obtained by referring to Figs. 4, 5, and 6 in which room temperature is plotted abscissa, the condensing unit head pressure as the ordinate.

Of course, the discharge pressure will vary on the same machine with suction pressure as well as room temperature, and the curves shown in Figs. 5, 6, and 7 will give the service man a rough check as to whether the "head pressure" or condensing pressure is or is not approximately correct.

A "head pressure" much higher than the proper amount may be caused by:

1. The improper amount of condensing surface of the condenser.
2. The improper amount of air blown through the condenser.

3. Air in the system.
4. Overcharge of refrigerant.
5. A partial plug up within the condenser tubing.

A head pressure much lower than the proper amount may indicate an undercharge of refrigerant (for all systems except high side float-type).

Under no circumstances can the head pressure in an air-cooled condensing unit be as low or lower than the pressure corresponding to the temperature as illustrated in Fig. 2, although an extremely large amount of condensing surface may result in the lower portion of the condenser cooling the condensed liquid down to the point where it will almost equal room temperature.

### Pearson Co. Modernizes Indianapolis Store

INDIANAPOLIS—The Pearson Co., Inc., Kelvinator and Hotpoint dealer, has just completed a modernization program embracing the front and every department of the 64-year-old furniture store here. A "Dream Kitchen," featuring the latest in household appliances and furniture, has been added.

The Pearson Co. has more than 20 appliance and furniture stores in Indiana and neighboring states.

Fig. 6. Head Pressures for Methyl Chloride Systems

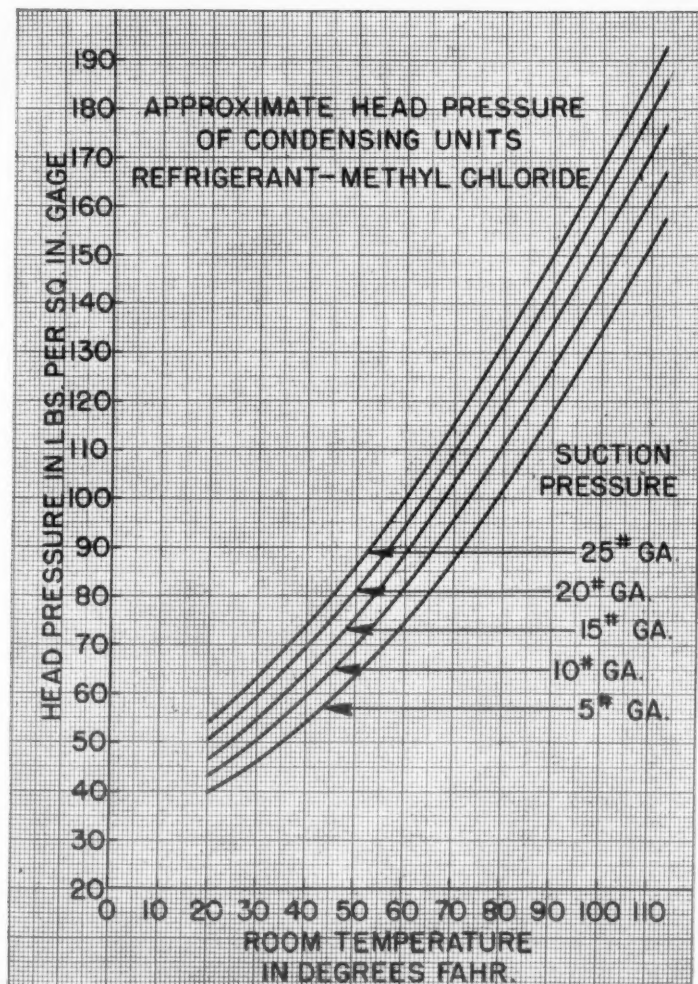
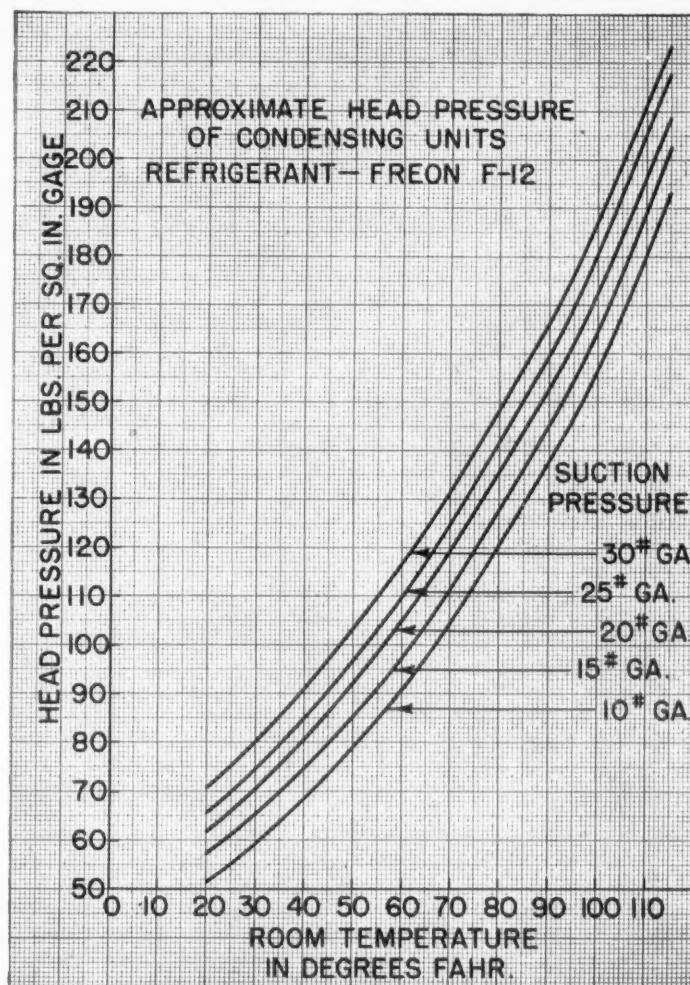


Fig. 7. Head Pressure Chart for Freon Systems



## Goodrich Develops New Asbestos Sheet Packing

AKRON, Ohio—A new sulphur-free, Neoprene-bonded, compressed asbestos sheet packing known as Prenite 20-M has been announced by B. F. Goodrich Co.

This new packing offers increased resistance not only to oil but also to such refrigerants as Freon, methyl chloride, and sulphur dioxide. Absence of sulphur in its composition makes it less apt to corrode metal parts.

Prenite 20-M sheet packing is available in 50 x 50-inch sheets in 1/16-inch, 1/32-inch, and 1/64-inch thicknesses.

## Tagliabue Announces 'Celestray' Recorder

BROOKLYN—A pyrometer catalog just issued by C. J. Tagliabue Mfg. Co. announces a new recorder, the Celestray, in which a sensitive mirror galvanometer is the primary controlling element, an inertialess beam of light taking the place of the customary metal boom or pointer.

The beam of light from the galvanometer, in moving on and off a phototube, passes the "controlling edge" of a screen, operating relays which in turn control a reversing motor, which drives the moving contact of the potentiometer. The phototube is not a calibrated element, and serves only to detect the direction of the light beam and bring the galvanometer to zero deflection.

Rapid balancing and control actions are claimed for the instrument because of its freedom from mechanical engagement and low moment of inertia. Average speed of the multiple point recorders is said to be less than 15 seconds per point, and accuracy is guaranteed to 0.1%.

### Mulhall & Jarvis in New Posts at Latham & Co.

NEWARK—Appointments of Walter Mulhall as supply department head and William Jarvis as promotional manager of E. B. Latham & Co., Inc., Leonard refrigerator and Zenith radio distributor, have been announced by R. L. Downing, general manager of the company's New Jersey operations.

Mr. Mulhall was formerly with General Electric Supply Co. for several years.

### Insulite Names Lindstrom & LeVene District Heads

MINNEAPOLIS—T. J. Lindstrom and O. R. LeVene have been appointed western and eastern industrial sales managers for Insulite Co., manufacturer of wood-fibre insulation products, reports E. H. Batchelder, Jr., vice president and sales manager. Mr. Lindstrom was formerly manager of the northwest sales district.

### New G-E Dealer in Allentown

ALLENTOWN, Pa.—The General Electric Appliance Store has recently been opened as G-E dealer here. J. P. Bomgardner is manager.

## GUARANTEE PROFITS WITH GENUINE KELVINATOR PARTS

★ ★ ★ 1937 ★ ★ ★

Another Milestone in Your Business and in Ours

**KELVINATOR THE PIONEER**

PRESENTS

**A NEW PARTNER IN THE CAUSE OF BETTER SERVICE  
THE AUTHORIZED KELVINATOR PARTS JOBBER**

• From now on there is absolutely no need for any service man to use "substitute parts" on any Kelvinator repair. There is an authorized jobber near you who will quickly furnish you GENUINE Kelvinator parts.

These parts mean better service, and the use of genuine Kelvinator parts will help build your reputation as a service man. There is no substitute for quality and there is no profit in repeat calls.

**Order Genuine Kelvinator Parts from Your Nearest Jobber**

Atlanta, Georgia—M. D. Patterson Company.  
Binghamton, New York—Service Supply Company.  
Birmingham, Alabama—Auto Service Company.  
Boston, Massachusetts—A. E. Borden Company.  
Brooklyn, New York—Coleman Electrical Supply Co., Inc.  
Buffalo, New York—Root, Neal & Company.  
Charlotte, North Carolina—Henry V. Dick & Co.  
Chicago, Illinois—Borg Warner Service Parts Co.  
Chicago, Illinois—H. Channon Company.  
Cincinnati, Ohio—Williams & Company, Inc.  
Cleveland, Ohio—Williams & Company, Inc.  
Dallas, Texas—The Electromotive Company.  
Detroit, Michigan—J. M. Oberer, Inc.  
Fort Wayne, Indiana—H. J. Schroeder Company.  
Greensboro, North Carolina—Hasco, Incorporated.  
Harrisburg, Pennsylvania—Refrigeration Supply Co.  
Houston, Texas—Walter Refrigeration Supply Co.  
Indianapolis, Indiana—F. H. Langsenkamp Co.  
Jacksonville, Florida—The Jamita Company.  
Kansas City, Missouri—Forslund Pump & Machinery Company.  
Los Angeles, California—Refrigerating & Power Specialties Co.  
Memphis, Tennessee—United Refrigerator Supply Co.  
Miami, Florida—Bernier-Pease, Inc.

Milwaukee, Wisconsin—Thermal Company, Inc.  
Minneapolis, Minnesota—Vincent Brass & Copper Co., Inc.  
Newark, New Jersey—T. W. Binder Company.  
New York, N. Y.—Paramount Electrical Supply Co., Inc.  
Omaha, Nebraska—United Supply Company.  
Paterson, New Jersey—White & Shauger, Inc.  
Philadelphia, Pennsylvania—Victor Sales Corp.  
Pittsburgh, Pennsylvania—Williams & Co., Inc.  
Portland, Oregon—Refrigerating & Power Specialties Co.  
Richmond, Virginia—Refrigeration Supply Co.  
Sacramento, California—Hinshaw Supply Company.  
St. Louis, Missouri—Brass & Copper Sales Co.  
St. Paul, Minnesota—Thermal Company, Inc.  
San Francisco, California—Refrigerating & Power Specialties Co.  
Seattle, Washington—Refrigerating & Power Specialties Co.  
South Bend, Indiana—F. H. Langsenkamp Co.  
Springfield, Illinois—United States Electric Co.  
Springfield, Massachusetts—C. P. Payson Company.  
Tulsa, Oklahoma—Machine Tool & Supply Company.  
Washington, D. C.—Refrigeration Supply Company.  
Waterloo, Iowa—Winterbottom Supply Company.  
Wichita Falls, Texas—United Electric Service Co.

**EASY TO HOLD**

**Artic**  
(DU PONT METHYL CHLORIDE)

DU PONT

E. I. du Pont de Nemours & Co., Inc.  
The R. & H. Chemicals Dept.  
Wilmington, Del.

District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco

ARTIC does not corrode metals or alloys generally used in refrigeration system construction, even if moisture is present. It operates efficiently in compact, light weight units with low power consumption. It gives controlled low temperatures down to -10°F. at POSITIVE pressures. For dependable refrigeration, specify and use ARTIC.

ARTIC—THE PREFERRED METHYL CHLORIDE FOR THE SERVICE MAN

**Make the Parts You Use Help Sell Your Service!**

**KELVINATOR USERS DESERVE GENUINE KELVINATOR PARTS**



## THE BUYER'S GUIDE



### "MEET MR. MATTESON—"

"Matt" is production superintendent of the valve department—but he doesn't sit in an office with his feet on the desk. You'll be more likely to find him at a work bench checking up on things. Here we caught him adjusting Peerless Thermal Expansion Valves for their correct super-heat setting.

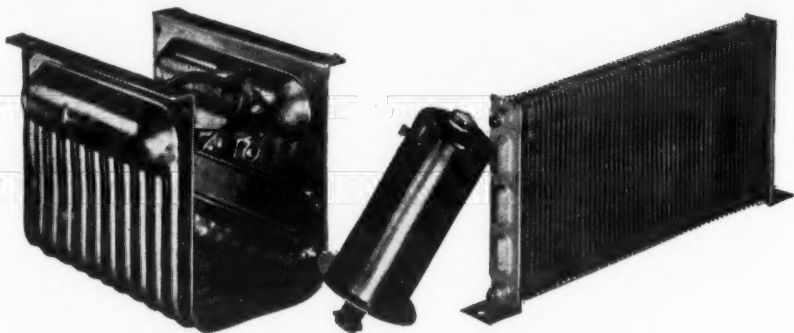
AND THERE'S A REASON FOR THIS. When you buy a Peerless Valve you know that every care and precaution has been taken during its manufacture—you know that it has passed rigid inspections by a man who has "an eagle eye" for the smallest defects. That's why Peerless Valves give long years of trouble-free service.

### PEERLESS of AMERICA, Inc.

ESTABLISHED IN 1912 AS THE PEERLESS ICE MACHINE CO.

Main Factory—General Offices  
New York Factory 515 West 35th St. Pacific Coast Factory  
43-20 34th St. Chicago 3000 S. Main St.  
Long Island City Los Angeles

## SUPPLYING THE REFRIGERATION INDUSTRY



Evaporators, Receivers, Condensers, Compressor Domes, Compressors and Mechanical Parts. Also "Houdize," a perfected process for permanently uniting ferrous or non-ferrous metals.

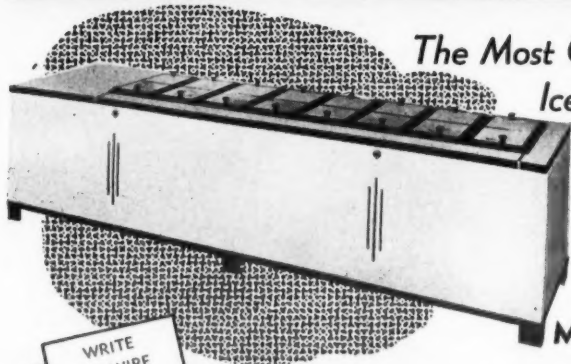
OAKES PRODUCTS CORP.  
North Chicago and Decatur, Ill.

HOUE ENGINEERING CORP.  
Buffalo, New York

DIVISIONS OF HOUDAILLE - HERSHEY CORPORATION

General Executive Offices: Detroit, Mich.

## ICE CREAM CABINETS



The Most Complete Line of  
Ice Cream Cabinets  
in the Industry

BUY YOUR  
CABINETS  
FROM THE  
MANUFACTURER

With or without compressors. Will operate using  
either Freon, Methyl Chloride or Sulphur Dioxide

**Schaefer** MINNEAPOLIS  
MINNESOTA  
EST. 1929

### No More Guess-Work

when you use the - - -

### MARSH "Serviceman"

REFRIGERATION SERVICE THERMOMETER

More and more it is becoming apparent to service men and distributors that the only correct and convincing reading of refrigerator temperature is made under actual working conditions with the refrigerator closed. The new Marsh "Serviceman" has been built to supply this need for a compact, versatile service thermometer, sturdy and accurate, yet modestly priced with plenty of capillary tubing for reaching any desired point of testing. Its clear dial with big divisions is easily read. There is no guess work as when an ordinary pocket thermometer is used. You know—and so does the customer!

"Recalibrator" assures lasting accuracy

The "Serviceman" is guaranteed accurate within one degree. If it is knocked out of adjustment, you simply place the bulb in cracked ice and water, and turn the "Recalibrator" screw until the pointer records 32°. It will then be right at every point on the dial. This is not the conventional pointer resetting device which is always subject to error. It is a real recalibration—an exclusive feature of Marsh Instruments. Modern facilities and volume production make it possible to sell this finely built, precision instrument (in ranges of -10° to +65°F. or -10° to +100°F.) at a dealers net price of \$5.00 (Minus 20° temperature range at slightly higher price.)

JAS. P. MARSH CORPORATION

2067 SOUTHPORT AVENUE CHICAGO

## Temple U. Will Offer Evening Classes in Refrigeration

PHILADELPHIA — Two-hour courses in electric refrigeration will be offered by the evening technical school of the extramural division of Temple university, beginning in September.

Instruction and experimental laboratory work will be supervised by Floyd C. Lowell, refrigeration manager of C. V. Hill & Co., Inc., manufacturer of commercial refrigeration equipment, Trenton, N. J.

Course for the first year, "Fundamentals of Refrigeration," takes up the study of properties of refrigerants, food preservation and storage, insulating materials and their uses, heat transmission, thermodynamics, and the refrigeration cycle.

Requirement for admission to the first course is a knowledge of mathematics through elementary algebra. An understanding of physics through mechanics is recommended.

"Refrigeration Application" is taken up the second year. It is based on the foundation course, though actual experience may be substituted as a qualification, and teaches the proper selection, installation, and servicing of refrigeration equipment.

## Chicago ASRE Honors 16 Charter Members

CHICAGO—To honor 16 of its charter members, the Chicago section of the American Society of Refrigeration Engineers held a dinner meeting in the LaSalle hotel here April 28, its twentieth anniversary.

As guest of honor, General Frank Parker, major general, U. S. Army, retired, at present executive vice president and general manager of Goldblatt Bros. Department Stores, Chicago, delivered an address entitled, "The Philippine Situation."

"The Small Refrigerating Machine" was the talk given by guest speaker Harry M. Williams, president of the A.S.R.E. and chief engineer of the Frigidaire Division of General Motors Corp.

Mr. Williams illustrated his discussion of the various phases of the development and application of the small commercial refrigerating unit with lantern slides and motion pictures.

As a feature of the program, B. E. Seamon, secretary of the section, read the original minutes of the first meeting of the Chicago group, held April 28, 1917.

Deane E. Perham, chairman of the section, acted as toastmaster of the meeting, which was attended by approximately 150 members and guests.

## Tampa Refrigeration Operators Must Pass Examination

TAMPA, Fla.—Certifying examinations for refrigeration plant operators and inspection of all plants of more than 7½ tons capacity were provided for by a new ordinance recently put into effect here.

Everyone operating refrigeration equipment before passage of the ordinance, however, may continue in his job if he presents to the city inspection bureau a certificate in which his efficiency is attested by his employer.

## Service Information on Makes and Models

**Editor's Note:** The following article covering service methods on the Ilg-Kold electric refrigerator is written by K. M. Newcum, author of the MASTER HOUSEHOLD REFRIGERATION SERVICE MANUAL.

Since the systems used in practically all makes of household electric refrigerators are of one of the general types described in the MASTER HOUSEHOLD REFRIGERATION SERVICE MANUAL, Mr. Newcum simplifies the problem of describing the service complaints and service operations by referring the reader to those parts of the MASTER HOUSEHOLD REFRIGERATION SERVICE

MANUAL, which cover the service problems and operations for the type of system involved.

Thus, in order to get the full benefit from the article, it really is necessary for the reader to have a copy of the MASTER HOUSEHOLD REFRIGERATION SERVICE MANUAL, or a file of the issues of the News in which the information appeared serially.

Further valuable information on Ilg-Kold models will be found in the 1936 REFRIGERATION AND AIR CONDITIONING SPECIFICATIONS BOOK, including such service information as oil and refrigerant charges, belt size, etc.

## FOR THE SERVICE MAN

## Design and Service Operations On the Graybar Ilg-Kold Unit

BY K. M. NEWCUM

The Ilg refrigerator was made by Ilg Electric Ventilating Co., 2850 North Crawford Ave., Chicago, and while it has been out of production for some time, repair parts are still available from the above company, which is a well-known manufacturer of air-conditioning equipment.

Many of the Ilg refrigerators were marketed by Graybar Electric and some Ilg refrigerators may bear the Graybar name.

Iso-Butane, under the trade name of Ilgoline, is the refrigerant used and ½ of one pound is the required charge.

The compressor model RC-2, as shown in Fig. 1, is a single-cylinder reciprocating type, equipped with two roller bearings. The crankshaft is counter-balanced and, as may be noted, utilizes only one main bearing.

The connecting rod is phosphor bronze. The piston is fitted with three rings and, as may be noted, is not equipped with a piston valve. The piston pin is locked into place in the piston boss by set screw 1560.

The gland seal is of the ground floating-ring type and is self-adjusted by the spring (Part No. 240). It more closely resembles the diaphragm type in principle. The seal nose faces on the roller bearing base, which fits snugly into the crankshaft.

Suction gas is drawn into the crankcase through the suction-line fitting (Part No. 1,000), thence up through the chamber surrounding the cylinder, and then down on the suction stroke of the compressor through the suction valve (Part No. 200), located in the plate between the cylinder and cylinder head, into the chamber above the piston. Oil returning with the refrigerant gas separates from the gas and drops down into the crankcase.

Discharge valve is opposite the suction valve and is of the same type. Both suction and discharge valves are made accessible by removing the cylinder head.

Notice compound gauge (Part No. 1,020) located at the bottom right-hand side of the crankcase. The compressor operates at a speed of 282 r.p.m.

The Ilg refrigeration circuit is shown in Fig. 2. Note the condenser is of the conventional finned type. The entire Ilg system is shown in detail in Fig. 3, with all the sections

numbered for further identification.

It will be observed in Figs. 2 and 3 that the compressor is not equipped with shut-off valves. The suction line connects to the crankcase at 6 (Fig. 3) with a standard flare elbow, and the discharge (condenser) line connects to the cylinder head at fitting 7 (Fig. 3).

The liquid receiver is provided with two diaphragm packless valves Nos. 1 and 2. Valve No. 1 is the condenser connection, and valve No. 2 is the liquid line shut-off service valve.

The Ilg evaporator is made from cast aluminum alloy, in which a continuous copper tubing is cast. The expansion valve 3 connects to the inlet end of this tubing, and suction line is attached to the outlet end at connection A.

The thermostat bulb is secured to the evaporator 13 by a clamp and set screw. It is important that the set screw be tight to assure a good thermal contact. The thermostat proper (see Fig. 3, No. 20) is located on the condensing unit.

Automatic expansion valve used is a Fedders, as shown in Fig. 69 "Master Household Refrigeration Service Manual," and described in Chapter 5 of that Manual. The correct normal operating back pressure for each system is stamped on base plate 28 on the compressor.

The thermostat is made by Ilg and is adjustable as follows:

The wheel 17 (Fig. 3) is the main adjustment wheel and it regulates the temperature range. Wheel 26 is the differential adjustment.

By turning adjustment wheel 17 counter-clockwise, the pressure on the spring is reduced, and consequently the temperature range is reduced and vice versa.

Turning adjustment wheel 26 to the right decreases or shortens the differential.

It will be observed from the foregoing that the Ilg system is a "Type 3" dry-expansion system as described in the "Master Household Refrigeration Service Manual," and all service complaints for a "Type 3A" system would apply.

Due to the absence of compressor service valves Nos. 1 and 2 as found in the typical "3A" system, the ac-

(Concluded on Page 21, Column 1)

Fig. 1. Details of Compressor Design

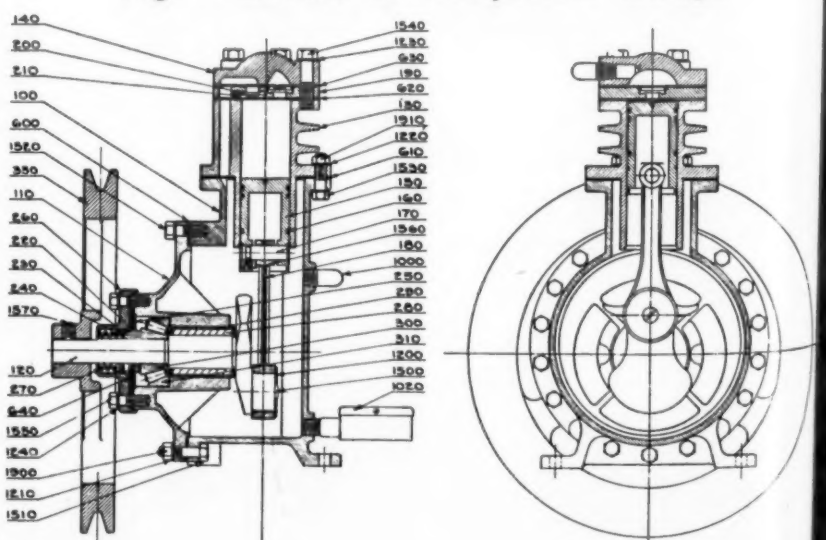


Fig. 1—Model RC-2 Ilg compressor is a single-cylinder model with counter-balanced crankshaft.



## Service Operation on Graybar Ilg-Kold

(Concluded from Page 20, Column 5)  
tual service operations will be changed to as follows:

Removing the refrigerant from the liquid line, expansion valve, evaporator, suction line, crankcase, and condenser would of necessity have to be done all at one time as follows:

Close Valve 2. Operate compressor until it will hold a 15-inch vacuum with the compressor idle. Screw expansion valve adjustment in two full turns. Stop compressor, crack valve 1 until gauge in crankcase reads about 1 lb. pressure. Close valves 1 and 2.

Any of the above-mentioned parts of the system may be removed for repair or replacement.

When removing condenser connection 7, any gas pressure contained in the condenser will be lost to the atmosphere.

To remove the air from the system after it has been disconnected for service proceed as follows:

With all other connections tightened into place, and valves 1 and 2 closed, remove condenser line from connection 7 and operate the compressor until it is exhausting no more air or refrigerant and then install and tighten connection 7. Stop compressor. Crack valve 2 until pressure builds up to over 10 lbs. on crankcase gauge. Close valve 2 and test for leaks.

Turn expansion valve adjustment screw out the two turns it was originally turned in, and open valves 1 and 2 and put system into operation.

To add refrigerant to the system, it must be done through either valve 1 or 2 when the lines are disconnected.

To convert an Ilg system into a standard "Type 3A" system, the fittings 6 and 7 should each be replaced with a special compressor valve with a pipe thread compressor connection.

With a valve of this type installed and the suction and condenser lines connected, the combination gauge set may be used and the system will

then be a standard "Type 3A" system and all service operations applying to this type of system would be followed. This conversion would materially reduce the time required to render service to an Ilg system and add materially to the convenience.

## PWA Buys 2,128 Electrolux Boxes for Housing Projects

WASHINGTON, D. C.—Purchase of 2,128 Electrolux gas refrigerators has been made by the Public Works Administration for installation in seven of its slum-clearance and low-rent housing projects.

The contract was awarded on the basis of open bidding on advertised specifications, and covers projects where low gas rates offered the Housing Division make this type of refrigeration the most economical, it was said.

Projects and the number of refrigerators to be installed in each follow:

New Towne Court, Cambridge, Mass., 270 units; Cherokee Terrace, Enid, Okla., 80 units; College Court, Louisville, Ky., 126 units; La Salle Place, Louisville, Ky., 212 units; Dixie Homes, Memphis, 250 units; Lauderdale Courts, Memphis, 636 units; Will Rogers Courts, Oklahoma City, 354 units.

## Niagara Hudson Power Adds 11,500 Customers in 1936

NEW YORK CITY—Nearly 11,500 new customers were added during 1936 to the rural electric lines of the Niagara Hudson Power Corp., according to the yearly report of the company's rural electrification department, made public last week.

More than 1,900 miles of new rural lines were constructed, four times as much as were finished in 1935; and service was extended to 35,097 farms and 138,578 non-farm customers throughout the company's rural franchise territory.

Rural use of electric ranges increased greatly during 1936, the report states. Dairy farmers employed milk coolers, dairy scalders, and milking machines, while brooders, water warmers, and hen-house lighting were adopted by poultry farms.

Fig. 2. Refrigeration Circuit on Ilg Models

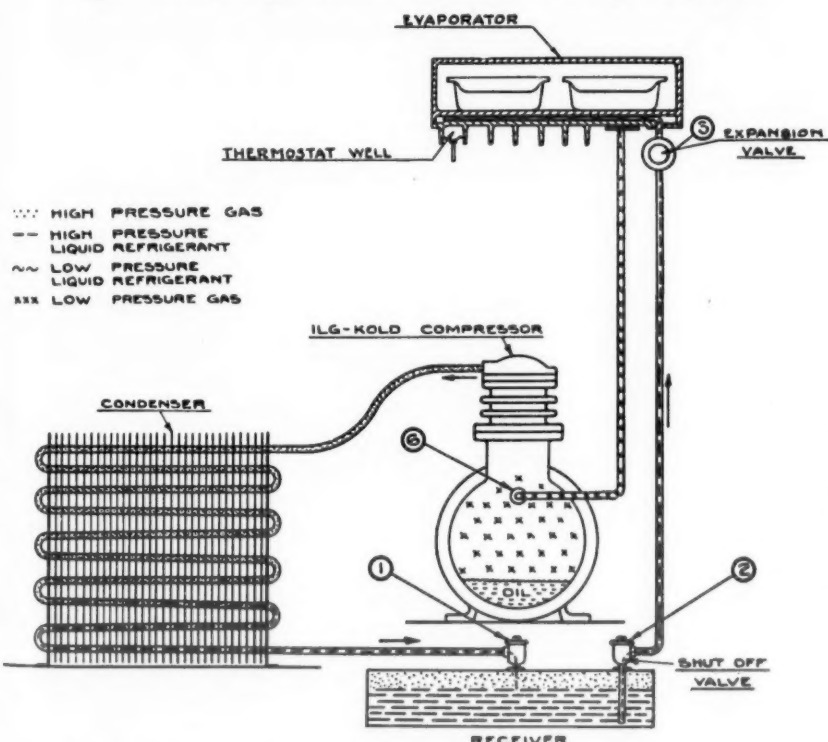


Fig. 2—The cycle in the Ilg-Kold unit. Parts numbered correspond to those with similar numbers in Fig. 3.

Fig. 3. Details of the System

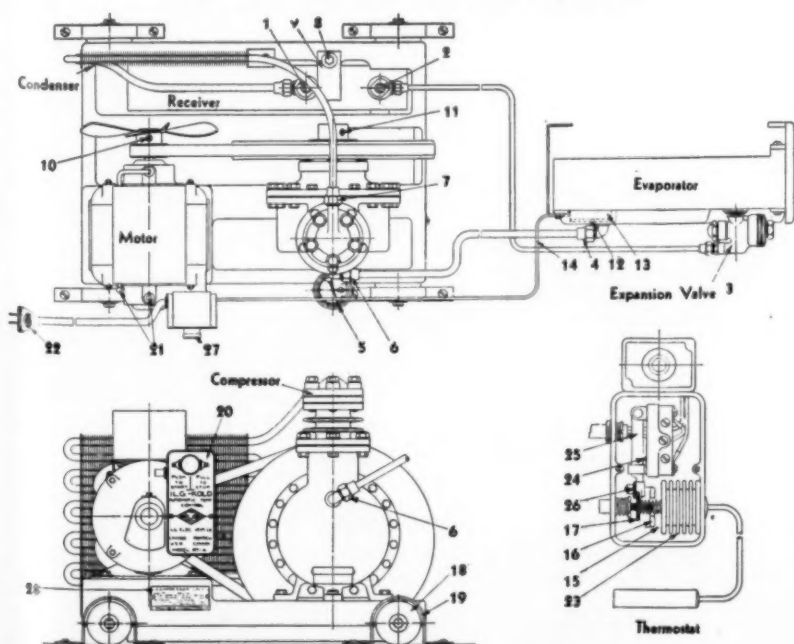


Fig. 3—Details of the whole Ilg-Kold refrigeration system.

## THE BUYER'S GUIDE

### Sensitive to Air Temperatures

HERE is a member of the popular Type RL "family" of Ranco Controls that is especially adapted for Walk-in Coolers, Display Cases, Florists' Cases and similar applications.

This Control is Ranco Type RL. Made with coil-type bulb of 3/4" diameter, it is sensitive to air temperatures. Like all Type RL models, it is sturdily built—accurate—dependable. Described in Bulletin 707—sent on request.

**Ranco**  
TYPE RL

RANCO, Inc., Columbus, Ohio



### Connelly Plans to Double Spokane Operations

SPOKANE, Wash.—F. B. Connelly Co., Seattle appliance distributor, plans to double its operations in this territory, according to Vice President K. A. Connelly, and to remodel its local office along modernistic lines.

C. A. Tubbs, in charge of operations of the Spokane district, has announced recent staff additions, including: Q. B. Griffin, office and credit manager; Betty Lou Rooks, secretary; Forrest M. Clark, service department; Clark R. Libbey, shipping department. Also on the Spokane staff are: John B. Simons, territory salesman; Dent Gwinn, assistant office manager; and Lowell Jackson, salesman.

Connelly Co. now handles Grunow refrigerators and radios, American Beauty washers, and national appliance lines throughout eastern Washington, northern Idaho, most of Montana, and eastern Oregon.

### Two Midwest Utilities Sign EH&FA Financing Contracts

WASHINGTON, D. C.—Contracts for financing of appliance sales have been signed by Electric Home & Farm Authority with Iowa Electric Light & Power Co. and Northern States Power Co. and its principal subsidiaries.

Companies included in the latter organization are the Northern States Power Companies of Minnesota and Wisconsin, Minneapolis General Electric Co., and the Interstate Light & Power Companies of Wisconsin and of Delaware. Other smaller subsidiaries of the system are expected to join at a later date.

Prominent in negotiating the contracts was the North Central Associated Electrical Industries, of which H. E. Young is chairman and A. H. Kessler, secretary.

### Southwestern Electrical Co. To Retail G-E in Wichita

WICHITA, Kan.—Southwestern Electrical Co. has been appointed major dealer for the complete line of General Electric home appliances, according to report, after recently relinquishing its wholesale electric appliance business.

At the National Home Show held in the Wichita Forum last March, the company took part by presenting the G-E "Talking Kitchen."

Officials of the company are: Robert M. Sutton, president; Homer S. Fox, treasurer; George Kindel, secretary; and George Vandenburg, appliance sales manager.

### Benn Plays Violin Solos On NBC Hobby Program

PHILADELPHIA—Stephen J. Benn, chief engineer of Merchant & Evans Co., manufacturer of refrigerant equipment, played two violin numbers—Schubert's "Ave Maria" and Sarasate's "Gypsy Airs"—on National Broadcasting Co.'s "Music Is My Hobby" program over radio station WEAF recently.

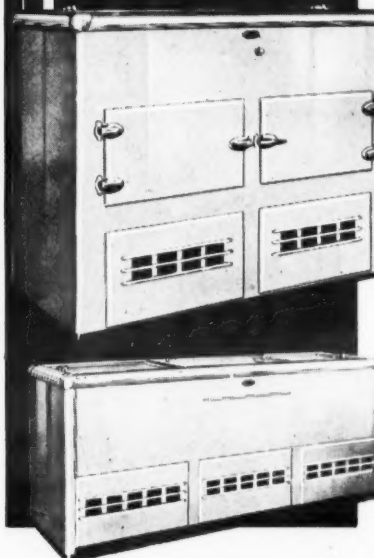
### Buhl's to Distribute Zenith in Michigan Area

DETROIT—Buhl's Sons Co. has taken over distribution of Zenith radios for 17 counties in eastern Michigan, according to C. W. Strawn, appliance manager.

Little activity is planned for the Zenith line until 1938 models come out, Mr. Strawn said.

Republic Supply Corp. previously held the Zenith franchise in this territory.

## PELCO makes FLOATING ICE . . . and SELLS FASTER because it COOLS FASTER!



(Above) MODEL 200  
(Below) MODEL 240

Universally accepted and respected for high quality and economic operation, PELCO is today the most talked of and fastest selling line on the market.

The swing is to PELCO—because it's first in sales, first in quality, first in profit.

PELCO makes its own floating ice—cools bottled beverages from room temperature to desired degree in 30 minutes.

GET the FACTS on PELCO—get behind it for real PROFIT in '37. Write Dept. A-57.

Refrigerator Division  
PORTABLE ELEVATOR MFG. CO.  
BLOOMINGTON, ILL. 61801  
Export Dept.: 304 E. 45TH ST., N. Y. CITY  
Cable Address: CARMUSE-N. Y.

**NEW KOCH ECON-O-CASE**

WELDED ALL-STEEL CONSTRUCTION  
CORKBOARD INSULATION  
TRIPLE GLAZING

HUMIDITY AND TEMPERATURE IN PERFECT BALANCE

THE PRICE LEADER OF A BIG LINE

DISTRIBUTORS WILL BE INTERESTED

**WRITE KOCH REFRIGERATORS TODAY**

EXPORT DEPT. 304 E. 45TH ST. N. Y. CITY

**Dayton V-BELTS**

Dayton V-Belts are the logical choice for all types of appliances, because they provide silent, dependable transmission—because their powerful grip prevents slippage—because they run smoothly without weaving, twisting or vibrating. A nearby distributor carries a complete stock.

THE DAYTON RUBBER MANUFACTURING CO.  
DAYTON, OHIO  
WORLD'S LARGEST MANUFACTURER OF V-BELTS

**Dayton V-BELTS**



## THE BUYER'S GUIDE

### Seepage-Proof FITTINGS

"Built Right to Stay Tight"

Every style and size of forged flared tube fitting for the refrigeration industry is available from standard stock at Commonwealth.

Thousands of semi-standard patterns enable us to quickly furnish any desired variation in pipe and tube ends.

Special fittings made to order.

Commonwealth fittings are correctly designed, carefully machined, and tube seats are protected in shipping.

25 years of service to the industry.

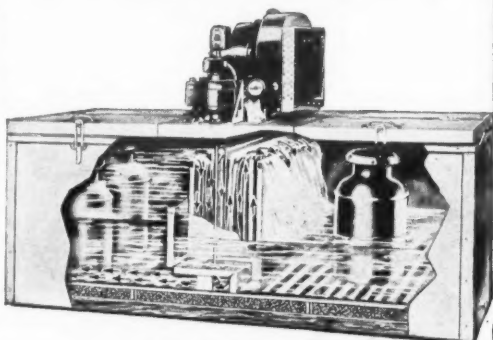
**COMMONWEALTH  
BRASS CORPORATION**

Commonwealth at Grand Trunk R. R.  
DETROIT, MICH.

## Raise Your Dairy-farm Sales Level

**DEMONSTRATE** to dairymen **ZERO-FLOW'S** constant water level during cooling period of both evening's and morning's milk (regardless of number of cans), and watch your sales rise. Tell them about **ZERO-FLOW'S** rapid, uniform milk cooling (to below 50° in an hour), and about the continual circulation of icy-cold water around cans up to their necks during cooling period. Show them they never have to handle cans twice; that reversing switch directs flow of water to either compartment. Here's the labor-saving cooler that puts your dairy-farm business on a quick-selling, trouble-free, profit basis.

with **ZERO-FLOW'S**  
"neck-high" cooling level



Write for proposition.

**WILSON CABINET CORP.**  
114 MAIN ST. SMYRNA, DEL.

## 5700 Items for You

- WRITE FOR 164 Page Catalog of BARGAINS
- 16 COMPLETE STOCKS—One as close as Your Telephone
- ONE STOP SERVICE—Refrigeration—Electric—Hardware—Motors
- 18 ENGINEERS at YOUR SERVICE—Let us engineer your jobs
- 1/2 H. P. Refrigerator Motor. A real bargain at \$7.95 net



We PAY NO RETAIL TAX.  
That proves we do not sell consumers at any price.

**SPECIAL OFFER!**

\$1.00 CIRCUIT TESTER and \$2.50 FLARING TOOL both for \$1.99

**W.W. GRAINGER INC.** GRAINGER BLDG. 825 CONGRESS ST. CHICAGO

## PAR WATER COOLED HIGHSIDES

PAR water cooled highsides are made in ten popular models, 1/3 to 10 horse power motor size. Employing the most advanced engineering design for high capacity and long life.

Multiple cylinders of large capacity insure very low operating speeds. Sizes 1/3 to 1 horse power are two cylinder pumps. Sizes 1 1/2 to 10 horsepower are V type four cylinder pumps.

All water cooled models are equipped with finned tube and shell condensers, having a radiation surface of 25 square feet to each horse power. Large finned surface reduces water consumption.

A finned tube super heat remover is used between compressor and condenser, which reduces the gas temperature before entering the condenser, greatly increasing efficiency.

The water valves are rigidly mounted to the base, requiring minimum of piping. All units completely wired ready for installation. Motors equipped with cooling fans.

**MODERN EQUIPMENT CORPORATION**  
DEFIANCE - OHIO - U.S.A.

# Air Conditioning Made Easy

By F. O. Jordan

## General Specifications for Compressors For Air Conditioning Use Listed

### SECTION 15 (Cont.)

#### Design of Equipment

##### C—Compressors

The compressor is the nucleus of the entire system. Other units in the system sometimes may impede or even nullify the efforts of the compressor, yet performance of the entire system and all of its constituent parts is limited strictly by what the compressor does and how it does it, for the compressor carries the bulk of the work and meets the brunt of mechanical wear and tear.

Compressors are divided into rotary and reciprocating types, the latter being used the oftener. Reciprocating compressors may be of the "V" type, of the "double opposed" type, or of the "in line" type with respect to cylinder arrangement; or the cylinders may be located radially.

The type most generally used is the reciprocating type with the cylinders in line. Rotary compressors are used only with refrigerants of very low operating pressures. Cylinders and crankcase of the compressor may be cast integrally, forming the compressor block, or the cylinders may be bolted into the crankcase. The block is made of close-grained cast iron which must be non-porous in order to avoid leakage of refrigerant.

An effective method of obtaining standardization of parts is to use varying numbers of cylinders of the same size throughout a considerable range of compressor sizes. Thus the same cylinders, cylinder heads, pistons, piston rings, valves, connecting rods, and other parts may be interchangeable for a considerable number of models.

Obviously, a tremendous saving in manufacturing costs, as well as simplification of the service and stock-carrying problems, may be effected by such standardization.

##### CONSTRUCTION MATERIALS

Cylinder interiors should be finished by honing. Cylinder heads should be made of the same material as the block, although opinions vary somewhat as to the advisability of water jacketing cylinder heads and/or walls. There seems to be little to be gained from water jacketing a compressor using Freon for air-conditioning service.

Pistons should be close-grained cast iron with ground finish, and may or may not be provided with rings. Piston rings generally are used except in small compressors (fractional or few-tons capacity).

Connecting rods should be drop-forged steel. Pistons and rods should

be as light as is consistent with required strength and rigidity.

The design and construction of the intake and exhaust valves and ports are among the most important influences upon efficiency and service. If the effective port openings are too small with the valve in the wide open position, gas velocities and pressure drops through them will be so high that capacity and efficiency will be materially reduced.

Since the area of the ports in a plane perpendicular to the cylinder axis is limited by the piston diameter, the effective port opening can be increased beyond a certain point only by increasing the valve lift. As valve lifts are increased, however, clearance volumes must be increased also to allow greater space for the greater lift. And increased clearance volumes result in lower efficiency and capacity.

There is a certain limit in valve lift, then, beyond which any advantage gained in greater lift will be more than offset by the detrimental attendant increase in clearance volume. The point of greatest efficiency must be determined for each valve and compressor design and speed.

Another point considering valve lift is this: an increase in lift results in a more violent pounding of the valve, which in turn results in greater wear upon both valve and seat and in higher noise levels.

##### TYPES OF VALVES

Valves may be of the "poppet" type, of the "wafer" or "disc" type, of the "ring" type, or of the "reed" type.

The mechanically operated poppet type valve generally is not used in air-conditioning service, as it is not considered necessary with the refrigerant pressures used, and tends to add to cost.

The wafer or disc valve generally is a disc about 1/2 inch to 3/4 inch in diameter and about .02-inch thick, with a lift of approximately .03 inch. As many valves are used as can be fitted into the available space, while the port used is a drilled opening with a diameter approximately 1/2 inch less than the diameter of the valve.

The ring type valve is a flat ring, inside diameter about 1 inch to 1 1/2 inches less than the outside diameter. The ring is made of flat stock about .02-inch thick and the lift is generally approximately .03 inch.

Ports used with the ring valve may be a series of quadrant-shaped slots, or a series of drilled openings arranged to form a circle which will be covered by the valve. As many rings are used as available space allows, the rings being of varying diameters so that each may fit concentrically within the next larger ring.

The reed valve is a reed or a strip of flexible metal placed flat upon the port so that the port is closed when the reed lies flat. The port is opened by the flexing of the reed from pressures below.

The reed must be supported at both ends, except in the case of fractional tonnage units, and is made of Swedish steel varying from .005 inch to .01 inch in thickness, the thinner reed being necessary for smaller compressors. The reed must be provided with a stop or guard which limits the opening of the reed and takes up the strain at the full open position.

Valves may be operated mechanically, or they may be operated by pressure and flow of the gases which pass through them. When the valve is operated by gas pressures, valve and seat wear and noise intensity may be reduced by providing small springs to close the valve before the reversal in gas pressure can "slam" the valve shut with great force.

Maximum valve area may be ob-

tained by locating the suction valves in the piston and by placing the exhaust valves in the head. With this arrangement the intake gas must be drawn in through the crankcase with attendant increased tendency to "slug" oil over from the crankcase, except in the case of the "dry sump" compressor.

When all valves are located in the head, it is not necessary to draw the intake gas through the crankcase, and oil slugging tendencies are minimized.

Proper guides or retainers must be provided for disc and for ring-type valves to insure proper closing upon the ports.

Discharge valves should be mounted in a valve plate held in place by springs with sufficient tension to hold the plate in place during normal operation, but which will protect the valve from breakage by allowing the plate to rise and relieve excessive pressures due to "slugging" or other causes.

Valve materials must be hard, tough steel, proof against fracture from shock and against excessive wear from friction and hammering. Reed valves must withstand fatigue and fracture from flexing. Generally, Swedish steel is used for this type of valve.

All refrigerant connections to compressor and condenser must be provided with gas-tight "service" or shut-off valves.

##### SHAFT SEALS

From the point of service required, one of the most troublesome elements of the compressor is the "seal" used for preventing gas leakage at the point where the crankshaft enters the crankcase. For this reason, the compressor must be so arranged that only one seal is required.

Generally, the seal is a metal disc attached to the shaft by means of a gas-tight bellows, and held by means of a spring hard against the ground surface of the crankcase immediately around the point where the shaft passes through it. The pressure between the disc and the seal surface formed by the crankcase must be sufficient to prevent gas leakage, yet must be low as possible to minimize power loss and wear due to friction.

The problem of lubricating the compressor consists of providing a sufficient quantity of oil at points where lubrication is required, without allowing undue quantities of oil to be carried over with the refrigerant as it is discharged from the compressor. There is a brief discussion of this problem on pages 4 and 5, Section No. 4.

The "splash" feed lubrication system generally is used for the smaller compression, while a combination system using splash feed for pistons, connecting rods, and wrist pins, with forced feed for main bearings, may be employed in the larger units.

The crankcase is generally used as an oil sump to which the oil is returned from the system, either by passing the suction gas through the crankcase, or by passing the refrigerant gas main through a filter or separator from which the separated oil is discharged to the crankcase through a float trap.

More difficulty is experienced in preventing oil from being carried from the crankcase when the suction gas is passed through the crankcase. With such designs, suitable baffles often are used to assist in drawing aside the incoming oil and in deflecting the incoming gas stream away from the oil sump.

With some designs, the crankcase itself is not used as an oil sump, a separate sump being provided to which the oil is discharged directly from the separator, and to which a small drain is run from the crankcase for carrying any small quantities of oil that enter the crankcase.

With this design, it is necessary to drill crankshafts, connecting rods, etc., for oilways and to use forced oil feed to all bearing surfaces including pistons. (Data for use in design is given further on in this section.)

##### D—Condensers

The condenser is the back door through which the unwelcome heat is ejected after it has been taken from the conditioned space by the air-conditioning unit working in collaboration with the compressor.

The heat is delivered to the condenser in the form of heat content in the high pressure gaseous refrigerant which has been compressed by the compressor. It is necessary for the temperature of the gas to be raised by compression to a level whose dif-

(Concluded on Page 23, Column 1)



## Types of Condensers & Their Relative Merits; Motors & Starters

(Continued from Page 22, Column 5)

ferential above the temperature of the air or water serving as the cooling or condensing medium is sufficient to force the unwanted heat into the condensing medium to be carried away.

If the gas temperature (hence pressure) is too low, excessive condenser surface or quantities of cooling medium must be used. By using higher condenser or gas pressures, the required quantity of condenser surface or cooling medium is reduced.

However, since the compressor must work against the condenser pressure, any such increase reduces compressor capacity and results in an increase in current consumption. Therefore, for any given temperature of cooling medium, and cost of cooling medium and power, there is one certain condenser pressure (hence condensing surface area and cooling medium flow) which will result in the lowest cost and highest commercial efficiency.

Therefore, the condenser must be designed to balance the compressor at an economical condenser gas pressure, when power and cooling medium are supplied under the conditions generally prevalent in the field in which the equipment is to be used.

### CLASSES OF CONDENSERS

Condensers may be divided into three general classes as follows:—air cooled, water cooled and evaporative. In the case of the air-cooled condenser, the heat which must be removed from the gaseous refrigerant in order to condense it with sufficient rapidity to limit the condenser pressure within the proper bounds, is carried away by passing air at a considerable velocity over the exterior surface of a coil through which the refrigerant is passed.

With the water-cooled condenser, the heat is removed from the gas by means of water which is circulated through tubing which comes in contact with the gas.

In the evaporative condenser, the heat is removed by the evaporative effect of water which is distributed in small quantities over the surface of tubing containing the gas, and which is evaporated by means of a mechanically produced air stream.

Copper fin and tube surface generally is used as a condensing surface of the air-cooled condenser, while a steel shell liquid-refrigerant receiver is located below. Main disadvantage of the air-cooled condenser lies in the fact that in order to avoid the necessity of using excessive condensing surface and condensing air flows, it is necessary to operate under very high gas temperatures (hence condenser pressures) to obtain the temperature differential between gas and condensing air which is necessary for effecting the required heat transfer.

This high condenser pressure is a considerable handicap upon the compressor, with the result that the capacity and efficiency of the air-cooled condensing unit is below that of the water-cooled unit of comparable size.

Chief advantage of the air-cooled unit lies in the fact that it does not require condensing water piping connections, and that it requires no condensing water—a decided advantage in certain localities.

### WATER-COOLED UNITS

Water-cooled condensers fall into three general classifications as to type, as follows: shell and tube, shell and coil, and double tube.

With the shell and tube type, the water is circulated through straight tubes which pass through the condensing chamber into which the compressor pumps the gaseous refrigerant. In this chamber, the gas is condensed into liquid which remains in the chamber until it is circulated through the system, so that the shell of the condenser serves not only as a condensing chamber, but as a liquid receiver, also.

With this type of condenser, good performance is obtained because very little of the water space is exposed to the air and because good transmission factors may be obtained by passing the condensing water through the tubes at considerable velocity.

Another advantage is that the straight tubes may easily be cleaned—an important consideration in certain localities. Generally the condenser tubes are smooth, although tubes with spiral fins are used also to increase the condensing effect by

increasing the surface which is exposed to gas.

The shell and coil condenser is similar to the shell and tube type, except that a spiral water tube is used instead of straight tubes. This type of coil surface adjusts itself readily to expansion without strain, and requires no headers nor baffles to distribute the flow of water. However, it is very difficult to clean the interior of the water coil.

The double-tube type of condenser consists of one tube which is inserted within another tube, the condensing water being circulated through the inner tube, while the gaseous refrigerant is circulated through the annular space between the tubes. A very high rate of heat transfer between gas and water is obtained because both water and gas may be circulated at high velocity.

With some designs, the tubes are straight and are provided with special fittings and headers, while with other arrangements, the tubes are coiled, a separate chamber being required to serve as a liquid receiver with either design.

With another design, the double tubes are inserted inside a shell which is provided with double tube sheets arranged so that the tubes are accessible for cleaning, and so that the gaseous refrigerant flows through the inner tube, while the condenser water circulates through the circular space between the tubes where it not only cools and condenses the hot gas within the inner tubes, but where it also after-cools the liquid refrigerant within the receiver chamber which surrounds the tubes within the shell.

With this latter arrangement, very high efficiency and maximum performance are obtained, because maximum heat transfer is obtained by circulating both gas and water at high velocities. (Data for use in condenser design is given further on in this section).

### E—Motors, Drives and Starters

Motors for use in conjunction with refrigerating compressors must meet the following requirements.

- 1.—Low starting current with a high starting torque.
- 2.—Ability to carry overloads, or operate at reduced voltage without overheating.
- 3.—Ruggedness, simplicity, and reliability.
- 4.—Absence of exposed electrical parts.
- 5.—Quietness and freedom from noise, not only under normal operation, but also when starting.
- 6.—High-power factor and efficiency, with low slip.
- 7.—Lubrication system requiring infrequent attention.
- 8.—Non-interference with radio reception.

Generally, installations of 5 hp. and under, especially in the residential field, must be for one-phase current. For installations where one-phase current must be used, the repulsion induction motor commonly is chosen because of requirement No. 1 above, although the capacitor-type motor meets all requirements when provided with the proper controls.

For installations where polyphase current is available, the standard squirrel-cage motor may be used for very small sizes, or for large sizes if some type of unloader is used with the compressor. If an unloader is used, the motor may be started directly across the line, unless prohibited by local regulations. Otherwise, a reduced voltage type of starter must be used.

The double squirrel-cage type of motor is especially suitable for refrigeration work as it may be designed to combine all of the desirable characteristics enumerated above and may be thrown directly across the line, even when no unloader is used with the compressor.

When more than one speed is desired, the variable-speed slip-ring motor may be used, although the lower efficiencies developed by this type of motor, except at high speed, make the multi-speed motor more desirable provided that the available speed range is satisfactory. This type of motor is obtainable with two, three and four speeds, and good efficiencies are shown at all speeds.

For the large alternating-current installations, synchronous motors frequently are used.

If the direct current motor is to be used, it should be of the com-

pound-wound type. Sizes larger than ½ hp. should be provided with reduced voltage starters.

The no-load speeds of 60-cycle motors are 1,800, 1,200, 900, 720, 600 and 450 r.p.m., while the no-load speeds of 25-cycle motors are 1,500, 750, and 500 r.p.m. Combinations of the above speeds may be obtained with the multi-speed type of motor. Except for the synchronous motor, the actual full-load running speeds are from 2% to 5% below no-load speeds.

Motors may be of either enclosed or ventilated type, the ventilated type being generally used except in the smaller sizes. The ventilated type of motor is somewhat lower in cost than the enclosed type of motor, although it may be necessary to use the enclosed or "explosion-proof" motor upon certain installations or in certain localities because of hazards or regulations.

Motors usually drive their compressors by means of a multi V-belt drive, or through direct drive. When direct drive is used, the entire motor housing is sometimes hermetically sealed and connected directly to the crankcase of the compressor so that motor housing and compressor crankcase form one chamber. With this arrangement, the seal is omitted from the main shaft, and the motor rotor is enclosed within the refrigerant.

Since the seal is frequently an actual and always a potential trouble, and since a certain amount of power is required to overcome its friction, its omission is very desirable. However, when the motor is enclosed within the refrigerant, care must be exercised in selecting motor windings and parts which are not affected by the refrigerant used, and the designer is limited to the use of squirrel-cage motors.

### TYPES OF STARTERS

In installations as described above, where motors may be thrown directly across the line upon starting, a toggle or turn-button type of manual snap starter switch generally is used up to ½ hp., while a pushbutton-operated magnetic enclosed switch, with no-voltage and inverse time-limit and overload protection, is used for larger sizes.

When reduced voltage starting is required as described above, a manual starter may be used, although a time-limit automatic starter is preferable. The automatic starter may be of the "resistance" type, although the auto-transformer type is preferable for large and expensive installations as it maintains accurately the reduced voltage for which it is adjusted regardless of the load.

The ideal starter for compressor service must be durable, simple, free from service under conditions which require frequent starting and stopping, devoid of exposed current-carrying parts, and must have extreme quietness of operation.

Protective devices must be included also for certain usages as described above. Variable speed motors must be provided with rheostats as necessary for obtaining the required speed control. Multi-speed motors must be provided with proper multi-speed control switches for throwing the proper motor windings into the circuit. Synchronous motors must be provided with proper synchronizing controls and a safety device for cutting off the power before damage can result if the motor falls out of step.

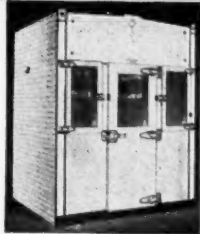
### Features

In addition to the principal elements of the condensing unit as described above, many other features or minor parts are necessary. Principal among these features are the controls and

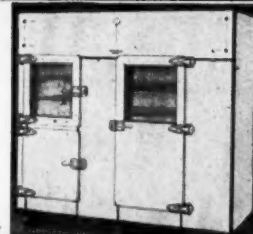
(Concluded on Page 24, Column 3)

## THE BUYER'S GUIDE

## DISTRIBUTORS WANTED



Percival equipment meets every requirement of the modern food store.

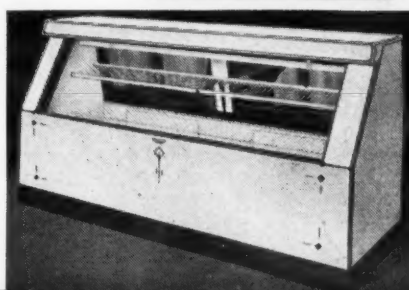


For mechanical refrigeration only

Percival's complete line will increase your sales of electrical refrigeration equipment and offer added earnings. Desirable territories still available. Write for complete information.

1886-1937

51 years of service to meat markets.



C. L. PERCIVAL CO.  
DES MOINES, IOWA



## PURO ELECTRIC WATER COOLERS

Thoroughly reinforced all steel attractively finished cabinets.  
Complete line of different Models and Capacities.  
Write for details and sales prices.

Puro Filter Corporation of America

440 Lafayette Street, New York City

Spring 7-1800



TYPE ECONO

## Electromatic WATER REGULATORS

Write for our catalog describing refrigeration and air conditioning controls available in sizes and types to suit your requirements.

THE ELECTROMATIC CORPORATION  
2100 INDIANA AVE., CHICAGO, ILL.

## HIGHEST Filtrine EFFICIENCY

### WATER COOLERS

COMMERCIAL — AIR CONDITIONING

From 2 gals. per hour to 500 gals. per minute

WATER FILTERS — STEEL PIPE COILS — SURGE TANKS

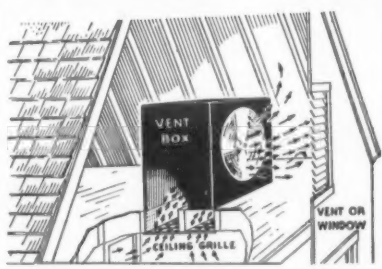
FILTRINE MFG. CO., Brooklyn, N. Y.

## ATTIC VENTILATION

### Dealers Wanted

An almost unlimited field. A necessary and paying adjunct to an air conditioning franchise. Territory still Open

INTERNATIONAL  
ENGINEERING INC.  
DAYTON, OHIO, U. S. A.



## UP-TO-DATE SPECIFICATIONS DATA

1937 DATA TO BE INCLUDED WITH 512-PAGE BOOK



A new 64-page booklet giving specifications of principal makes of 1937 Household Electric Refrigerators will be given with all future orders for the 1936 Specifications Book which includes data on all models of all makes of household and commercial refrigeration equipment and air conditioners for all years.

The material is a revision of that which appeared in the March 17 issue of the News plus the tabulation of "convenience" features which appeared in the News issued April 21.

Material in the Specifications Book was compiled with a view toward making it usable by both the service man and salesman. For the service man, the 512-page book gives information on the kind and quantity of refrigerant, belt size, compressor and motor data, etc. Of interest to salesmen is the list price, cubic-foot capacity, dimensions, shelf area, finish, etc. This information applies to commercial condensing units and air conditioners as well as household electric refrigerators.

Price \$3.00 per copy . . . Send order with remittance to  
BUSINESS NEWS PUBLISHING CO., 5229 Cass Ave., Detroit, Mich.



## THE BUYER'S GUIDE

# MILLS

## COMPRESSORS

for Commercial Use

Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois



**DITLEVSEN & COMPANY, Inc.**  
75 West Street, New York, N. Y.

CONDENSING UNITS from 1/4 to 2 H.P. Air and Water Cooled.

BARE COMPRESSORS

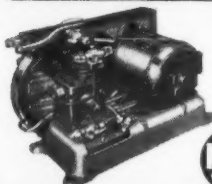
EXPORTERS OF:

Household Refrigerators, Commercial Condensing Units, Bare Compressors, Commercial Evaporators, Ice Cream Cabinets, Milk Cooling Cabinets, Air Conditioning Equipment.

1 1/2 h.p. Water Cooled Unit

Attractive Prices Write for Details

## FOR SERVICE REPLACEMENT & NEW INSTALLATIONS



M&E  
EST. 1894

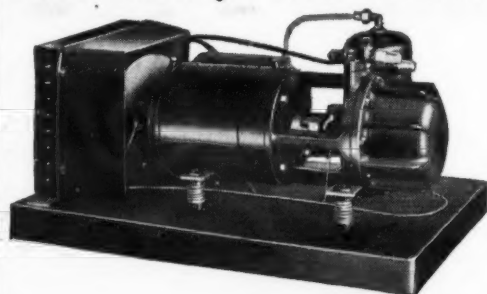
M&E Bare Compressors and complete units, available with or without motors and controls, meet every need of the Assembler or Service Company with high quality, moderately priced.

One, two and four cylinder models for SO-2, CH<sub>3</sub>CL and F-12. 1/4 h.p. to 20 h.p.

Write for new catalog—a valuable reference

**MERCHANT & EVANS COMPANY**  
Philadelphia, Pa., U.S.A. Plant at Lancaster, Pa.

## Revolutionary New Oscillating Compressor!



A life-saver for manufacturers not making their own units! Here's the opportunity for Service Companies to save their customers money and give them a new up-to-minute unit at a lower cost than repairing the old one!

Write for Prices and Details!

**O'Keefe & Merritt Co.**  
3700 E. Olympic Blvd.  
Los Angeles, Calif.

# GIBSON

Get Our Prices on Condensing Units

For All Commercial Purposes

1/4 H.P. to 15 H.P.

Air Cooled

Water Cooled

**Gibson Electric Refrigerator Corporation**  
Greenville Michigan



**"CHIEFTAIN"**  
QUALITY-BUILT  
COMPRESSORS and  
CONDENSING UNITS

All bearings diamond bored. Positive lubrication of parts by newly developed process plus forced feed lubrication in all models.

Sizes 1/6, 1/5, 1/4, 1/3 h.p.

Write for prices

**TECUMSEH PRODUCTS CO.**  
Tecumseh, Mich.

## OFFICES

New York  
480 Lexington Ave.

Chicago  
Room 2258  
La Salle-Wacker  
Building

Detroit Export  
Department  
1002 Palms Bldg.

Los Angeles  
122 Mariposa St.

St. Louis  
577 Arcade Bldg.



WRITE FOR OUR NEW  
1937 CATALOG

## ACCELERATED MOTION! INSURES RAPID HEAT TRANSFER

Not just a thin, trickling stream on the bottom of the tube, but the same refrigerant swirling and washing the entire inside of the tube because of THERMO FIN.

Accelerated to high velocity by the carefully predetermined angle of the twist, it adds to the effective surface of the fin coil.

The patented THERMO FIN is found only in coils made by Manufacturers Fin Coil Company.

**MANUFACTURERS FIN COIL CO.**  
2505-7 SO. PULASKI ROAD  
CHICAGO, ILL.

## Special Features of Condensing Unit Control; Water Cooler Design

(Concluded from Page 23, Column 3)

safety devices, which are as follows:

1.—**High Pressure Safety Cutout**—This control consists of a bellows-operated switch which is actuated by the head pressure or condenser pressure to shut off the current to the compressor motor before damage can result from excessive head pressure due to condenser-water failure or other causes.

2.—**Low-Pressure Control**—This control consists of a bellows-operated switch which is actuated by the suction or evaporator pressure to stop the compressor when the suction pressure drops to some predetermined level, and start the compressor again when the suction pressure rises to a predetermined level.

This control is not only used to prevent possible damage from "slugging" which might result from operation at subatmospheric suction pressures, but is used as an operating control also to operate the compressor according to the demand by the air-conditioning unit for refrigerant as described in Section No. 6.

### WATER CONTROL VALVE

3.—**Water-Control Valve (or Head Pressure Control Valve)**—This control consists of a bellows-operated throttling valve in the condensing-water main which is actuated by the head pressure to reduce the condensing water flow upon falling head pressures, and to increase the flow upon rising head pressures. This valve may be set so that it will maintain a practically constant head pressure at any desired level within the range of the equipment.

### UNLOADER

4.—**Unloader**—This control consists of a device for reducing the power required to operate the compressor until it has been brought up to speed. The device operates to open a bypass between the high and low-pressure sides of the piston, or to hold open the compressor valves until the operating speed has been attained.

The control may be operated by some type of flyball governor, or by an oil pressure device which holds the valve open until a certain speed is attained. Although the unloader often is omitted in the smaller compressor, or when the double squirrel-cage type of motor or the reduced voltage starter is employed, its use tends to reduce noise and light flicker upon starting.

### CAPACITY REDUCER

5.—**Capacity Reducer**—Various methods are sometimes used for reducing the capacity of the compressor so that reduced loads will be balanced more evenly. This control consists of some method of opening, or partially opening a bypass between the high-pressure and the low-pressure sides of the piston, or of providing a port in the cylinder wall which allows a partial bypassing of gas at the proper percentage of the stroke, or of rendering a cylinder inoperative by holding open a valve.

The device may be actuated by thermostat located in the room to be conditioned, or inserted in the water cooler, or it may be so connected to the suction line that it is actuated by falling suction pressure.

When the latter method of capacity control is used in conjunction with air-conditioning equipment, a room thermostat may be used to cut a certain percentage of the air-conditioning coil out of service, or to reduce the load upon the coil a certain percentage by bypassing air around the coil. The resultant suction pressure drop may be utilized to actuate the compressor capacity-reducing device to reduce the compressor capacity by the same percentage so that the drop in suction pressure will be held within narrow limits, with the result that the latent-to-total ratio of the air-conditioning coil will be unchanged.

If the load is not reduced in this manner simultaneously with the reduction of compressor capacity, the suction pressure will rise and practically stop all latent work. If the load is reduced, but the compressor capacity is not reduced in proportion the suction pressure will fall, increasing the latent-to-total ratio of work done. By controls which are properly arranged to utilize these characteristics, the performance of the equipment may be suited with great exactitude, not only to the magnitude, but also to the character of the load.

6.—**Pressure Relief**—The plate which

carries the discharge valves often is held down by heavy springs which hold the plate in position during normal operation, but which allows the plate to rise and so protect the valves from the damage due to excessive pressures or from slugs of oil.

A relief valve generally is required for protecting the condenser-receiver from excessive gas pressure. A fusible plug in the condenser shell also serves as a protection against damage due to condensing water failure.

### The Water Cooler

A general discussion of water coolers is given in Section No. 3.

A.—**Types**—The usual types of water coolers are as follows:

The shell and tube type in which the refrigerant is expanded within tubing placed inside the shell forming the water chamber. The disadvantage of this type of cooler is that the water velocities are very low so that low transmission rates are obtained. The situation may be improved by installing baffles which increase the velocity of water flow.

The shell and tube type in which the water is passed through the tubes, while the refrigerant is passed into and expanded in the chamber formed by the shell. Disadvantage of this type of cooler is that the low velocity of the refrigerant within the shell allows the oil which is brought in by the refrigerant to accumulate in the expansion chamber. With this type of cooler the refrigerant is sometimes sprayed into the water tubing as a greater cooling capacity may be obtained for a given quantity of refrigerant in this way.

Other forms of coolers may be employed which maintain sufficient velocities both in the water flow and in the refrigerant stream to obtain a high rate of heat transfer as well as to prevent accumulation of oil. This may be accomplished by the use of a double-tube arrangement in which the refrigerant is expanded within the inner tube while the water is circulated through an annular space between the tubes, or by enclosing a spirally wrapped tube within the annular space between two concentric shells of different diameters so that two adjacent spiral passages are formed, one passage being in the tube, and the other being in the space between the shells and adjacent turns of the spiral tube.

With the latter arrangement, the refrigerant generally is expanded within the tube, while the water is circulated through the space between the tubes, the inner shell being used for chilled-water storage.

### SPECIFICATIONS

B. **Desirable Features**—Water coolers should have the following characteristics:

Maximum water pressure drop of 2 lbs. and maximum refrigerant pressure drop of 12 lbs. These requirements are met by properly limiting the lengths of refrigerant and water paths with respect to their cross sectional area.

The design should be such that oil is not accumulated. For this reason, the gas passage should be of such a size that refrigerant gas velocities do not fall below 1,000 f.p.m.

The usual water temperatures required from the water cooler are 40° to 45° depending upon the latent-to-total load ratio which must be developed by the air-conditioning unit.

The temperature rise at which the water is returned to the cooler generally varies between 6° and 10° depending upon quantity of water circulated per ton of refrigerating compressor and upon the distance through which the water must be circulated.

Cooler designs generally are based upon refrigerant temperatures of 35° to 40°, as higher refrigerant temperatures necessitate the use of excessively large and costly coolers, while the use of lower refrigerant temperatures penalizes condensing-unit operation.

C. **Design Data**—Design data is tabulated at the end of this section.

### The Air-Conditioning Unit

In addition to the general production requirements mentioned above, the following specific requirements should be considered in the design of the air-conditioning unit.

#### A. Design and Construction

The room type of air-conditioning unit for office or residential service should be as follows:

1. May be of the vertical floor-mounted type, or of the horizontal overhead suspended type, the former being the most popular.

2. Latent-to-total capacity ratio should be about 25%, at a room dry bulb temperature of 75° to 80° and a room dewpoint temperature of 58° to 60°. This requirement sets the following limits:

(a) Cooling and dehumidifying coil depths in direction of airflow 4 1/2 to 6 1/2 inches.

(b) Coil refrigerant temperature—40° to 45°.

(c) Air delivery capacity of about 500 to 600 c.f.m. per ton of refrigerating capacity. These values are demanded also for ample air distribution because of the usual ratios of load to volume of the residence or small office.

3. Operation must be very quiet (not above 32 to 35 decibels). This requirement sets the following limits.

(a) Maximum air velocity through coils (based on gross coil face area)—400 f.p.m.

(b) Maximum fan outlet velocity—800 to 1,200 f.p.m.

(c) Fan-tip speed—1,800 to 2,200 f.p.m.

(d) Especially quiet sleeve-bearing motor.

(e) Non-interference with radio (which indicates shielded condenser-type motors).

(f) Vibration-proof mounting for mechanical parts.

(g) Rugged construction throughout, with tight, rattle-proof joints or parts and freedom from large, flat, unbraced areas or sheets which can form sounding boards.

(h) Smooth air passages without sudden transformations or changes in direction, with maximum air velocities of 800 f.p.m.

4.—**Ornamental exterior**, designed and finished to match usual interior decorations.

5.—**Exterior insulated** by material or air space sufficient to prevent exterior surface from falling below 65° in order to prevent "sweating." Insulation or arrangement of all cold surfaces so that they cannot "sweat" and drip into the room.

6.—**Dimensions** must be such that unit passes easily through usual doors, and takes up minimum of usable space. It is an advantage if the height of the floor model is such that it can be set below the average window, while the suspended horizontal model should not be greater than 18 inches in height because of interference with head room.

7.—**The air-delivery velocity** from the discharge grille should be about 500 to 700 f.p.m. as the noise-limitation requirement prohibits higher velocities, while good air distribution with the usual private office or residential room prohibits lower velocities. Generally, the discharge grille should be of a directional, rust-proof type.

8.—**Air-delivery temperatures** from the discharge grille should not be lower than 55°. This temperature may be regulated by a fixed-air bypass around the cooling coil.

9.—**Recirculating-air intakes** should be as high as possible and should be so located that short-circuiting of discharge air to the recirculating opening is impossible. Outside-air intakes, and cooling-air intakes and discharge connections for air-cooled self-contained units should be adjustable as to length and position to facilitate connecting window openings.

10.—**Provision** must be made for disposing of moisture resulting from dehumidification, and for preventing it from blowing or leaking into the room.

11.—**Air filters** should be available. Filters for this type of unit should be of a light, low-resistance type.

12.—**The total capacity** (cooling plus dehumidification) of the office and residential line of room-type units should range from 1/2 ton to 2 tons of refrigeration with 1/4-ton units being available for spot cooling.

The heating capacity in B.t.u. per hour of the summer and winter unit should be three to four times its cooling capacity, the heating coil being of such characteristics that this capacity is developed with the same air circulation that is used during the cooling season.

13.—**Fans** may be either direct or V-belt-driven, with the latter having the preference because variations in capacity may be obtained readily merely by changing pulley sizes.

### Viking to Distribute Airtemp in Dallas

DALLAS—Viking Air Conditioning Co. has been appointed Airtemp distributor in this territory.



## CLASSIFIED ADVERTISING

RATES: Fifty words or less, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

### POSITIONS AVAILABLE

POSITION AVAILABLE for engineer capable of writing, developing, and supervising correspondence course in air conditioning and refrigeration. Also openings available for teacher in day and evening sessions of various phases of air conditioning, refrigeration, and drafting. Write only, giving qualifications, etc. TECHNICAL INSTITUTE, 244 W. 14th St., New York City.

WANTED—2 shop men experienced in rebuilding G.E. sealed, and all popular makes direct driven units. Also one experienced in repairing thermostatic expansion valves. State past experience, references, salary expected, and whether you reside in New York City. Box 921, Air Conditioning and Refrigeration News.

OLD ESTABLISHED DISTRIBUTOR with metropolitan area 150,000 and 40 counties middle west requires services of commercial sales manager of selling, executive type. Box 922, Air Conditioning and Refrigeration News.

OLD ESTABLISHED MANUFACTURER just entering the domestic refrigeration field is seeking the services of two experienced district managers with an established following and good record of performance. Applicants must be employed at present and have a least several years experience in some part of the following territory: New England, New York, Pennsylvania, New Jersey, Delaware, Maryland, Michigan, Ohio, Indiana, Illinois, Wisconsin, Missouri, Iowa, Minnesota, Nebraska, Texas. Men selected will be compensated on the basis of salary, expenses, and bonus. If interested reply in writing giving full particulars as to education, age, refrigeration experience, present territory, references, etc. Kindly make your letter complete in every detail and mail same to Sales Department, DETROLA RADIO AND TELEVISION CORP., Detroit, Mich.

TERRITORY SALES REPRESENTATIVES for nationally known, well rated manufacturer of commercial and air conditioning condensing units. Only men with good records and experience in establishing distributors, and organizing territories will be considered. Full particulars regarding education, age, experience, territory previously traveled and references must accompany first letter. Unusual opportunity for the right men. State salary expected. Confidential. Box 920, Air Conditioning and Refrigeration News.

EXCELLENT OPPORTUNITY for all around shop man capable of managing service shop specializing in complete rebuilding of Majestic hermetically sealed units. State qualifications and salary desired. Box 919, Air Conditioning and Refrigeration News.

### POSITIONS WANTED

FRIGIDAIRE INSTALLATION and service man with many years' experience desires position as service manager with factory, factory branch, or large distributor of refrigeration products. Experience gained through connection with Frigidaire distributors in Minneapolis, Minn., and Milwaukee, Wis., and the past five years operation of going independent service company specializing in maintenance contracts. Reason for seeking employment elsewhere: change of climate. Age 38, weight 232, Height 6'11", married, and of sober habits. References. Available on 30 days' notice. Address RAY J. SPILMAN, 1912 W. Walnut St., Milwaukee, Wisconsin.

YOUNG MAN 20 years old. Graduate of the Refrigeration and Air Conditioning Institute of Chicago and four year technical course. Specialized in mechanical drawing and electricity. Understands controls. Desires a chance to get started with a reliable concern in Chicago or vicinity. WARREN LIPPERT, 6931 Olcott Ave., Chicago, Ill.

### FRANCHISES AVAILABLE

DISTRIBUTORS WANTED to handle well known Carbon Block Water Purifiers. Guaranteed to remove taste, odor, sediment, discoloration, and everything in suspension. Can be used in connection with all makes of water coolers. Used by leading water cooler companies for more than ten years. Protected territories available. THE WATER FILTER & COOLER CO., 10 West 29th St., New York City, N. Y.

REFRIGERATOR display case dealers, mechanical refrigeration dealers, and service organizations. Write today for full information on dealer franchise world-famous Oreole refrigerator display cases, coolers, institutional boxes, etc. Address, stating territory desired, Sales Manager, OTTENHEIMER BROS., INC., 1001-45 N. Montford Ave., Baltimore, Maryland.

### EQUIPMENT WANTED

WANTED—General Electric and Westinghouse household units. State type, model, condition and price wanted. Box 915, Air Conditioning and Refrigeration News.

### EQUIPMENT FOR SALE

TWIN CYLINDER and single cylinder Methyl compressors, brand new. Ideal for domestic and small commercial installations. Also fans, pulleys, expansion valves, fittings, recording instruments, receiver valves, and condensers. Priced at fraction of cost. A few 1/2 H.P. A.C. single cylinder complete condensing units. Discontinuing

our refrigeration department. Box 914, Air Conditioning and Refrigeration News.

MAJESTIC SURPLUSES. 1,000 complete units "as is" \$15.00. New Majestic capacitor motors \$4.50. Evaporators \$4.00. Copper condensers \$1.25. Electrolytic condensers 75¢. Two hour test cabinets with air lifts and Bristol recorders. Set of five \$37.50. Cost \$400. 3/16" tinned copper tubing 20¢ lb. G. & G. COMPANY, 5801 Dickens, Chicago.

### REPAIR SERVICE

MAJESTIC AND GRIGSBY-GRUNOW refrigerator and radio parts service. We have purchased all of the original Grigsby-Grunow Majestic refrigerator and radio parts service. We are the only original, the only genuine, the only direct factory parts and service anywhere in the world. Beware of inferior replacements and parts. Everything we sell is factory guaranteed. Send for prices and dealerships. G. & G. GENUINE MAJESTIC REFRIGERATOR & RADIO PARTS SERVICE, 5801 W. Dickens Ave., Chicago.

HERMETIC UNITS REPAIRED and exchanged—Majestic \$18.50—Westinghouse \$25.00—Gibson \$18.50—General Electric \$25.00—all model household units. Prices F.O.B. our factory—six months guarantee. Complete machine shop service on all makes domestic and commercial. ALLIED REFRIGERATION PRODUCTS CO., 1947 Flushing Ave., Brooklyn, N. Y.

GENERAL ELECTRIC and Majestic hermetically sealed units repaired and exchanged. Guaranteed work. Wholesale prices quoted f.o.b. Chicago. AMERICAN REFRIGERATING ENGINEERS, INC., 2257 Silverton Drive, Chicago, Illinois.

DOMESTIC REFRIGERATION controls repaired. Ranco pencil types \$1.75, all others, \$2.00. All work unconditionally guaranteed for six months. Jobs completely refinished. Prompt service. UNITED GAUGE AND INSTRUMENT CO., 436 West 57th St., New York City.

CONTROLS REPAIRED for the refrigeration and air-conditioning trade. Any make, almost any type. Every control individually calibrated. Steam traps, packless valve glands, and regulators repaired. If it contains a bellows, Halelectric can repair it. Service prompt, prices right, guarantee reliable. HALELECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

### ARTIFICIAL FOOD DISPLAYS

MANUFACTURERS of artificial fruits, vegetables, meats. Over fifty pieces from which to select, including full size Turkey, Capon, Chicken, and Watermelon. Sets to accommodate every make of refrigerator. Reasonable prices ranging from \$2.75 to \$9.00 per set. Write for complete data. ROMAN ART CO., INC., 2704 Locust Blvd., St. Louis, Mo.

## Merriam Celebrates Fifth Anniversary At Sales Meeting

SCHENECTADY—A. Wayne Merriam, Inc., G-E distributor in this territory, recently celebrated its fifth anniversary in connection with one of the company's regular sales meetings.

Morning session of the day-long sales gathering featured a three-hour trip through the G-E plant for more than 100 attending dealers and salesmen. This portion of the program was planned and arranged by W. B. Hill and Fred Sarchet, of G-E's refrigeration department.

"Sales Psychology," a sales drama showing 25 ways to get an order, was presented by G-E's dramatic troupe to open the afternoon session. Then John Wicht, manager, home laundry equipment division, Bridgeport, Conn., and J. K. Kay, manager, home laundry advertising, assisted by Mr. Whitney, presented the entire G-E home laundry equipment line, which has recently been taken on by the Merriam organization.

B. W. Stryker, of Merriam's commercial department, R. E. Remley, of G-E's commercial division at Cleveland, and J. R. Murdock cooperated in putting on a model commercial sales presentation.

Following the commercial program, W. M. Page, chairman of the assembly, directed a motor parade to Mohawk Club, where dinner and the balance of the program was scheduled.

Not until after the dinner was the Merriam anniversary announced. Then Mr. Merriam assumed the duties of toastmaster, and spoke of the Merriam organization, its history, and its future plans. Congratulations were extended by several representatives of General Electric Co., including R. Beehler, home laundry division; W. Chandler, dealer division; G. Drollinger, dishwasher and disposal division; Geo. Kobick, apartment house and unit kitchen division; W. C. Noll, product department; Earl Norling, dealer division; R. C. Padgett, range division; and Robert Kayne, president of General Electric Specialty Dealers' Organization.

## SUPPLY JOBBER ACTIVITY

### Requirements of Chicago Association Listed

(Concluded from Page 1, Column 3) benefit of allied persons, firms, or corporations. This definition does not include that type of person or concern who is recognized by some manufacturers as national or territorial sales agents.

The term "trade," as used by the organization, includes servicemen, dealers, distributors, wholesalers, contractors, and ice cream manufacturers.

Constitution of the association provides that "membership shall be limited to persons, firms, or corporations actively engaged in wholesaling of refrigeration and air-conditioning parts and supplies, and performing the following functions:

"1. Stock at least 75% of the following groups of items: 1. Copper tubing, hard and soft; 2. Refrigeration valves and fittings; 3. Accessories; 4. Refrigerants and lubricants; 5. Belts and pulleys; 6. Expansion valves; 7. Controls; 8. Gaskets; 9. Tools; 10. Gauges and thermometers; 11. Filters and dehydrators; 12. Evaporators and condensers.

"2. Maintain and warehouse a stock of such products to supply adequately the requirements of the trade.

"3. Distribute, to the trade only, either a catalog of his own or an aggregation of his manufacturers' catalogs. If the jobber issues his own catalog, the manufacturer is to have the privilege of editing those pages or parts of pages covering his particular products."

Officers of the new suppliers group are: president, Irving Alter, Harry Alter Co.; vice president, H. W. Blythe, H. W. Blythe Co.; secretary, Mrs. D. E. Browne, B-Line Refrigeration Parts Co.; treasurer, E. B. Chase, Chase Refrigeration Supply Co.

The president and vice president, together with Mr. W. A. Smith, Borg-Warner Corp., comprise the board of directors.

Membership of Chicago Refrigeration

Supplies is as follows: E. P. Sorenson, Airo Supply Co.; Mr. Alter; W. F. Hauber, Automatic Heating & Cooling Supply Co.; Mrs. Brown; Mr. Blythe; Mr. Smith; B. Dawes, H. Channon Co.; Mr. Chase; E. O. Slavik, W. W. Grainger Co.; Herman Goldberg, Standard Refrigeration Parts Co.

The association maintains an office at 160 N. LaSalle St., which is in charge of Mr. Binner, who as executive secretary conducts the association's business.

### H. Channon Co. Announces Personnel Changes

CHICAGO—Several changes in the personnel of H. Channon Co., refrigeration and air-conditioning jobber, have been announced by Ralph E. Kramer, general sales manager.

Bert B. Dawes has been appointed manager of the company's refrigeration and air-conditioning department. Jack Glass has been transferred to field activities, and Bob Mitchell has been appointed to replace him. Charles F. Vitaska has been named assistant to Mr. Mitchell.

### 75 Attend Formal Opening of Macklanburg Jobbing Dept.

OKLAHOMA CITY—Seventy-five dealers and service men attended the formal opening of the new refrigeration supply jobbing department of Macklanburg Brass & Copper Products, Inc., here April 8, reports A. R. Morin, department manager.

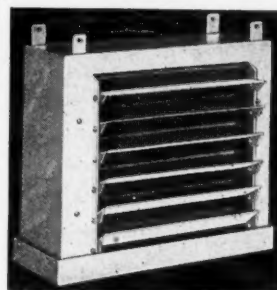
Sponsored by Imperial Brass Mfg. Co., the meeting drew dealers from Cushing, Wewoka, Guthrie, Hominy, and Chickasha, Okla., in addition to Oklahoma City men, Mr. Morin said.

### Canadian Jobber Lists Lines In New Catalog

MONTREAL, Que., Canada—Railway & Engineering Specialties, Ltd., a Canadian member of National Refrigeration Supply Jobbers Association, has issued to its customers a catalog listing the various lines of refrigerating equipment it carries.

Stocks are carried at the company's headquarters here, and at branches in Toronto and Winnipeg.

## THE BUYER'S GUIDE



### UNIT BLOWERS

Pipe Coils  
Air-Conditioning Coils

### FIN COILS

5/8" — 3/4" — 1"

Steel or Copper

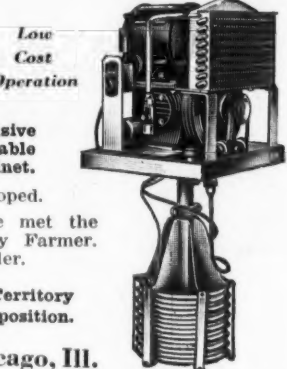
### REMPE COMPANY

340 N. Sacramento Blvd. Chicago, Illinois

REMPPE

### NETCO MILK COOLER

COOLS MILK TO 50° IN 1 HOUR  
ECONOMICAL—DEPENDABLE



No Installation Cost—Requires Less Service—Exclusive Mechanical Agitation—Operates in Any Cooling Tank—Suitable for 4-6-8 Can Size Tanks—Furnished With or Without Cabinet.

The most mechanically perfect Milk Cooler ever developed.

Thousands satisfied Users. NETCO Milk Coolers have met the test of time; now in its fifth year serving the Dairy Farmer. Send for free Folder. See your nearest NETCO Dealer.

DEALERS Exclusive Arrangement for good Territory  
WANTED open for Live Dealers. Write for Proposition.

National Electric Tool Co., Dept. R. N., Chicago, Ill.

## NOW READY ! ! !

### CATALOG NO. 11

COMPLETE COVERAGE ATTRACTIVE PRICES

BE SURE YOU GET YOUR COPY

### H. CHANNON CO.

133 N. WACKER DRIVE CHICAGO, ILL.

**Expert REBUILDING & REPAIR**

**General Electric MONITOR \$25**  
All Household Models  
MAJESTIC HERMETIC UNITS—\$20.50  
SERVEL HERMETIC UNITS—\$18.50  
F.O.B. OUR FACTORY  
One Year Unconditional Guarantee

A complete rebuilding and replacement service. All units tested for temperature, cycling, wattage consumption and quietness. Thousands of units rebuilt in past seven years. We guarantee satisfaction.

**REFRIGERATION MAINTENANCE CORP.**  
365 EAST ILLINOIS ST. — CHICAGO, ILLINOIS

**It's NEW!**

**SEND FOR IT NOW!**

**HARRY ALTER'S**  
1937 catalog of  
Air Conditioning  
and Refrigeration  
Parts and Supplies.  
Write on your letterhead.  
We protect the dealer.

**HARRY ALTER COMPANY**  
1728 S. Michigan Ave., Chicago  
BRANCHES  
NEW YORK-ST. LOUIS-CLEVELAND

## BINDERS

### For back issues of the News

We offer a binder designed and made especially for keeping your file copies of the News neat and always available for ready reference.

The price is \$3.75 shipped to you postpaid in the United States and Possessions and Pan-American Postal Union countries. For all Foreign countries postage based on a shipping weight of 6 pounds must be added to this price. Send your remittance with order. May we send you one?

Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

## PARTS-SUPPLIES-TOOLS for REFRIGERATION-AIR CONDITIONING

### Complete Stock—Quick Service

One-day service on your order for any parts, supplies or tools you may need for any type of refrigerator or air conditioner. QUALITY MERCHANDISE, absolutely guaranteed and offered at the lowest prices. Deal with us—obtain all your needs from one source—and rely absolutely on getting exactly what you order. WHOLESALE ONLY for your protection. Request big, complete, new catalog on your business card or letterhead. It's FREE.

AIRO SUPPLY CO. 2732 N. Ashland Ave., CHICAGO  
17 West 60th Street, NEW YORK

ALL YOUR NEEDS FROM ONE SOURCE

SEND FOR BIG FREE CATALOG



## THE BUYER'S GUIDE

**HENRY "Y" Strainer** FOR COPPER PIPE



Exceptional design. Made of brass. Negligible pressure drop. Easily removable screen. Very large screen area. Light weight. Trapping of oil can be entirely prevented by installing strainer on its side or in a vertical position. Write for Catalog 62: Dryers, Strainers, Valves and Service Tools.

Type 895

**HENRY VALVE CO.** 1001 15th N. SPALDING AVE. CHICAGO, ILL.  
Stocked By Leading Jobbers

PIONEERS and SPECIALISTS in

## GASKETS for ELECTRIC » » REFRIGERATION

offer you Metallic Gaskets that hold regardless of what your refrigerant may be and will not shed particles of material to clog up important working parts in a machine. A metal that will not "creep." Once tight it will stay "tight."

"Send for NEW complete catalog"

**CHICAGO-WILCOX MFG. CO.**  
7701 S. AVALON AVE. CHICAGO, ILL.

**YOU TAKE NO CHANCES** when you use this charging line



NEW, stronger, specially reinforced charging lines that protect against leakage and breakage and offer a new high standard of safety. Made with seamless bronze corrugated core which completely prevents gas from coming into contact with the covering. Oilproof textile braiding outside. Bronze couplings are soldered to the bronze core, making an integral joint. Special spring-wire reinforcing at ends prevents excessive bending at points subjected to greatest strain. Lines are furnished with swivel end connections or with copper tubing extensions.

WRITE FOR CATALOG 77E covering all Imperial Refrigeration specialties for service work.

**IMPERIAL BRASS MFG. CO.**  
565 S. Racine Ave. Chicago, Ill.

**IMPERIAL Charging Lines**  
VALVES • FITTINGS • TOOLS • DEHYDRATORS • STRAINERS • FLOATS

ORDER FROM YOUR JOBBER

RECEIVER TANKS—COMPRESSOR BASES—MOTOR MOUNTING BASES—AND OTHER STAMPINGS AND ASSEMBLIES FOR REFRIGERATION AND AIR CONDITIONING.

Our Receiver Tanks are made with drawn shells. Assembly by Hydrogen Brazing produces tanks chemically clean and free from dirt. Can furnish tanks painted if desired.

**Acklin**

THE ACKLIN STAMPING CO.  
TOLEDO, OHIO  
Chicago, Ill.  
Detroit, 2-165 Gen. Motors Bldg.

Brazed in Controlled Atmosphere

PRECISION



**YOUR COMPRESSOR** is as efficient as the piston you use. Remember, we specialize in Pistons. That's our business. Let us quote on your requirements.

**SPENCER-SMITH**  
MACHINE COMPANY  
HOWELL, MICH.

**Class 9100 REGULATOR with MANUAL CUT-IN LEVER**




Allows starting of refrigerating cycle in advance of normal cut-in point... contacts may be locked closed... does not affect operation of high pressure cut-out or overload... can be applied to any 9100 Regulator, temperature or pressure.

**SQUARE D COMPANY**  
REGULATOR DIVISION, DETROIT, MICHIGAN  
WESTERN DIVISION, LOS ANGELES, CALIFORNIA  
SQUARE D COMPANY, CANADA, LTD., TORONTO, CANADA

**ACME PIPE COILS**  
"THE COILS BY WHICH OTHERS ARE JUDGED"

FLAT  
DOUBLE FLAT  
BOX  
OVAL  
CYLINDRICAL  
RECTANGULAR



HARDENING ROOM COILS

ACME PROCESSED

**JACKSON ACME INDUSTRIES, Inc. MICHIGAN**

## Utility Services Come Under Kansas Tax

TOPEKA, Kan.—Electric, gas, heat, and water services will come under the 2% Kansas retail sales-tax law recently enacted by the state's legislature. The law becomes effective June 1, 1937, and applies to all retailed items except cigarettes and gasoline, already subject to special excise tax. No tax distinctions were made between the products of privately and municipally owned utilities.

The token plan of tax collection was adopted, tokens of Kansas-mined zinc being preferred to scrip. Manufacture of the tokens will be done at the State Reformatory at Hutchinson, Kan.

Revenues from the sales tax are earmarked, first for state compliance with the federal social security program and for state aid to schools in poor districts, and, second, for the reduction of real property taxes.

Defeat of a severance tax leaves Kansas the only oil producing state which does not tax gross production of oil.

## Anderson Opens Quality Appliance Shop

SALT LAKE CITY—Quality Appliance Shop, recently opened by Harve P. Anderson, for 12 years with Southeast Furniture Co., will handle Kelvinator refrigerators and ranges.

Radio spot advertising four times a day is backed up with newspaper advertising, according to Mr. Anderson. The company's salesmen are paid 12% commission.

## Leonard Distributor Appoints McKeehan Manager

KNOXVILLE, Tenn.—Appointment of J. C. McKeehan as manager of the refrigerator division of the Maytag Appliance Corp., Leonard distributor here, was announced recently by J. L. Bomar, company president. Mr. McKeehan has been a salesman for the company for six years.

## Port Marion Hardware Adds Refrigerator Line

POINT MARION, Pa.—Point Marion Hardware Co., Electrolux dealer, has added a line of General Electric refrigerators. Raol Frere is manager of the store's appliance department.

## PATENTS

Issued April 6, 1937

2,075,831. DEVICE FOR COOLING OR WARMING A LIQUID. Peter Schlumbohm, New York, N. Y. Application Nov. 8, 1935. Serial No. 48,901. 18 Claims. (Cl. 62-1)

2,075,838. MECHANICAL REFRIGERATOR APPARATUS. Lucien L. Torrey, Los Angeles, Calif. Application Dec. 3, 1922. Serial No. 645,602. 8 Claims. (Cl. 62-116)

2,075,840. COMBINED REFRIGERATING AND POWER ACTUATED DEVICE. Harry R. Van Deventer, New York, and Samuel C. McKeown, Mount Vernon, N. Y., assignors, by means assignments, to General Motors Corp. Application Aug. 7, 1929. Serial No. 384,014. Renewed Nov. 22, 1934. 13 Claims. (Cl. 62-4)

2,075,862. HUMIDIFIER. James E. Myers, Whitefish Bay, Wis. Application Feb. 19, 1934. Serial No. 711,888. Renewed Sept. 8, 1936. 10 Claims. (Cl. 261-15)

2,075,863. HEAT TRANSFER APPARATUS AND REFRACTORY WALL STRUCTURE THEREFOR. Arthur E. Nash, Philadelphia, Pa., assignor to Alcorn Combustion Co., Philadelphia, Pa. Application Dec. 19, 1934. Serial No. 758,851. 21 Claims. (Cl. 122-356)

2,075,921. TREATMENTS OF RESTRICTED FLOW TUBING AND APPARATUS THEREFOR. Wynne G. Winkler and Albert G. Bruck, Cincinnati, Ohio, assignors to The Crosley Radio Corp., Cincinnati, Ohio. Application Jan. 15, 1935. Serial No. 1,920. 9 Claims. (Cl. 153-2)

2,075,922. FULLY AUTOMATIC REFRIGERATOR. Otto Zehnder, Granichen, Switzerland, assignor to Gebrüder Zehnder Radiatoren & Apparatebau, Granichen, Switzerland. Application April 2, 1936. Serial No. 72,378. In Switzerland May 1, 1935. 3 Claims. (Cl. 62-115)

2,076,058. REFRIGERATION. Sven W. E. Andersson, Evansville, Ind., assignor to Servel, Inc., New York, N. Y. Application July 3, 1936. Serial No. 88,718. 6 Claims. (Cl. 62-1)

2,076,099. REFRIGERATOR SHELF. Charles Nelson Smith, University City, Mo., Harry G. Smith, Evansville, Ind., and Charles A. Bauer, Springfield, Mass., assignors to Hoosier Lamp & Stamping Corp., Evansville, Ind. Application June 18, 1936. Serial No. 85,830. 4 Claims. (Cl. 211-153)

2,076,119. COOLING UNIT. Thomas W. Carraway, Dallas, Tex., assignor to Carraway Engineering Co., Inc., Dallas, Tex. Application July 2, 1934. Serial No. 733,402. 4 Claims. (Cl. 261-111)

2,076,142. REFRIGERATING DEVICE. Richard Gaschke, East Orange, N. J. Application April 25, 1936. Serial No. 76,307. 5 Claims. (Cl. 99-243)

2,076,173. COLD STORAGE CABINET. George W. Cocks, Upper Montclair, N. J. Application Dec. 19, 1934. Serial No. 758,192. 6 Claims. (Cl. 312-150)

2,076,192. AIR CONDITIONING APPARATUS. William C. Carr, Richmond, Va. Application Sept. 24, 1935. Serial No. 41,907. 7 Claims. (Cl. 261-90)

2,076,208. FREEZING TRAY. Herbert H. Richter, Houston, Tex. Application May 18, 1936. Serial No. 80,426. 3 Claims. (Cl. 62-108.5)

2,076,277. APPARATUS FOR REFRIGERATING. Ralph Reinhart, Peninsula, Ohio. Application Nov. 25, 1932. Serial No. 644,145. Renewed July 25, 1935. 4 Claims. (Cl. 62-126)

2,076,332. LUBRICATION SYSTEM. Robert W. Zercher, York, Pa., assignor to York Ice Machinery Corp., York, Pa. Application June 29, 1935. Serial No. 29,133. 10 Claims. (Cl. 230-206)

2,076,402. CONDENSER COOLING

WATER CONTROL. Roland J. Fairchild, Kalamazoo, Mich. Application April 22, 1935. Serial No. 17,578. 13 Claims. (Cl. 257-24)

2,076,463. AIR-IMPROVEMENT DEVICE. Carl Jacobsohn, Hamburg, Germany, assignor to Ernst Carl Baehni, Hamburg, Germany. Application July 21, 1934. Serial No. 736,423. In Germany Dec. 27, 1933. 4 Claims. (Cl. 261-104)

### Reissues

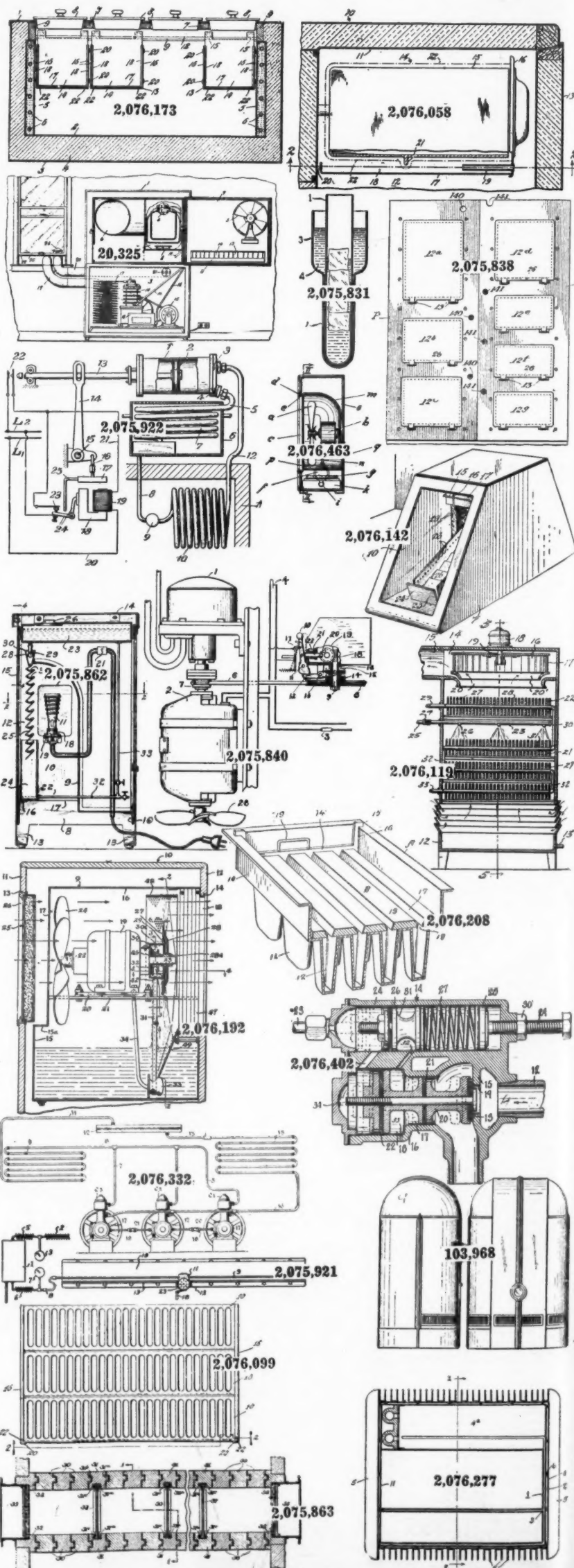
20,325. AIR COOLING APPARATUS. John Q. Sherman, Dayton, Ohio. Original No. 1,890,626, dated March 6, 1932. Serial No. 143,982, Oct. 25, 1926. Application for reissue March 6, 1933. Serial No. 659,877. 27 Claims. (Cl. 62-129)

### Designs

103,968. DESIGN FOR A CASING FOR AN AIR CONDITIONING UNIT OR SIMILAR ARTICLE. Donald C. Hollister, Grosse Pointe, Mich., assignor to W. A. Maher, Detroit, Mich., doing business as Precision Products Co. Application Feb. 12, 1937. Serial No. 67,605. Term of patent 7 years.

### PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.



The refrigerant is sent to the National

1. Bott  
2. Pres  
3. Wat  
4. Ice  
5. Ice  
6. Bott  
7. Milk  
8. Air  
9. Air  
10. Air  
11. Air  
12. Air  
13. Con  
14. Con  
15. Con  
16. Con  
17. Con  
18. Con  
19. Con  
20. Con  
21. Con  
22. Con  
23. Con  
24. Con  
25. Con  
26. Con

27. Tot

28. Tot

29. Con

30. Air

31. Tot

32. Tot

33. Tot

34. Tot

35. Tot

36. Tot

37. Tot

38. Tot

39. Tot

40. Tot

41. Tot

42. Tot

43. Tot

44. Tot

45. Tot

46. Tot

47. Tot

48. Tot

49. Tot

50. Tot

51. Tot

52. Tot

53. Tot

54. Tot

55. Tot

56. Tot

57. Tot

58. Tot

59. Tot

60. Tot

61. Tot

62. Tot

63. Tot

64. Tot

65. Tot

66. Tot

67. Tot

68. Tot

69. Tot

70. Tot

71. Tot

72. Tot

73. Tot

74. Tot

75. Tot

76. Tot

77. Tot

78. Tot

79. Tot

80. Tot

81. Tot

82. Tot

83. Tot

84. Tot

85. Tot

86. Tot

87. Tot

88. Tot

89. Tot

90. Tot

91. Tot

92. Tot

93. Tot

94. Tot

95. Tot

96. Tot

97. Tot

98. Tot

99. Tot

100. Tot

101. Tot

102. Tot

103. Tot

104. Tot

105. Tot

106. Tot

107. Tot

108. Tot

109. Tot

110. Tot

111. Tot

112. Tot

113. Tot

114. Tot

115. Tot

116. Tot

117. Tot

118. Tot

119. Tot

120. Tot



## REFRIGERATION SALES STATISTICS

World Sales of Nema Commercial Refrigeration  
Division Members Total 36,166 in March

The following report of commercial refrigerating and air-conditioning equipment sales for March, 1937, were made to the Commercial Refrigeration Section of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) by the following 15 companies:

Brunner Manufacturing Co., Carrier Engineering Corp., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigeration Corp., Kelvinator Corp., Leonard Refrigerator Co., Merchant & Evans Co., Norge Corp., Servel, Inc., Uniflow Manufacturing Co., Universal Cooler Corp., Westinghouse Electric & Manufacturing Co., York Ice Machinery Corp.

vinator Corp., Leonard Refrigerator Co., Merchant & Evans Co., Norge Corp., Servel, Inc., Uniflow Manufacturing Co., Universal Cooler Corp., Westinghouse Electric & Manufacturing Co., York Ice Machinery Corp.

	Domestic		Canadian		Other Foreign		Total World	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1. Bottle Water Coolers—Complete.....	1,161	\$ 65,374	2	\$ 136	20	\$ 1,465	1,183	\$ 66,975
2. Pressure Water Coolers—Complete.....	2,865	247,570	1	51	65	6,871	2,931	254,492
3. Water Coolers—Low Side Only.....	105	7,293			3	379	108	7,672
4. Ice Cream Cabinets—Complete.....	3,917	651,819	68	7,466	199	21,558	4,184	680,843
5. Ice Cream Holding Cab. Only (Remote).....	488	65,574	2	255	17	2,504	507	68,333
6. Bottled Beverage Coolers—Complete.....	6,349	530,903	6	474	56	4,168	6,411	535,545
7. Milk Cooling Cabinets (No High Sides).....	399	25,565	2	147	10	579	411	26,291
8. Air Conditioners—Self-Contained.....	2,660	615,862			142	32,830	2,802	648,692
9. Air Conditioners—Floor Type.....								
10. Air Conditioners—Ceiling.....	318	133,942			10	3,074	328	137,016
11. Air Conditioners—Ceiling Type.....								
12. Air Conditioners—Ceiling Type.....								
13. Condensing Units—Less Than 1/2 Hp.....	4,164	216,032	49	3,097	1,909	121,112	6,122	340,241
14. Condensing Units—1/2 Hp.....	3,631	263,113	46	3,908	1,397	114,706	5,074	381,727
15. Condensing Units—3/4 Hp.....	1,988	196,682	54	6,180	487	40,908	2,529	243,770
16. Condensing Units—1 Hp.....	1,212	162,866	23	3,397	317	44,130	1,552	210,393
17. Condensing Units—1 1/2 Hp.....	1,101	168,769	17	3,046	171	28,729	1,289	200,564
18. Condensing Units—2 Hp.....	676	134,400	9	1,989	72	15,066	757	151,455
19. Condensing Units—3 Hp.....	277	84,338	1	235	48	10,813	326	75,386
20. Condensing Units—4 Hp.....	298	87,487	4	924	78	17,990	380	106,401
21. Condensing Units—5 Hp.....	141	63,045	1	190	12	5,233	154	68,468
22. Condensing Units—7 1/2 Hp.....	99	61,142	1	683	5	3,255	105	65,080
23. Condensing Units—10 Hp.....	102	76,843			26	19,803	128	96,116
24. Condensing Units—15 Hp.....	108	92,564			3	1,602	111	94,166
25. Condensing Units—20 Hp.....	65	69,647			3	3,664	68	73,311
26. Condensing Units—25 Hp.....	61	73,202					61	73,202
27. Total Lines 13 to 26 Inclusive.....	13,923	1,730,150	205	23,649	4,527	426,511	18,655	2,180,310
28. Total Lines 1, 2, 4, 6, 8, and 27.....	30,875		282		5,009		36,166	
29. Commercial Evaporators.....	4,224	118,199	275	8,786	1,439	38,341	5,938	165,326
30. Air-Conditioning Evaporators.....	366	71,777			17	3,043	383	74,820
31. Total Commercial & Air Conditioning.....		\$4,350,255		\$47,190		\$554,620		\$4,952,065

Record March Total of 353,557 Household  
Sales Reported by Nema Manufacturers

The following 15 member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) reported household refrigerator sales for March, 1937: Apex Electrical Mfg. Co., Crosley Radio Corp., Fairbanks, Morse & Co., Frigidaire Corp., General Electric Co., Gibson Electric Refrigeration Corp., Kelvinator Corp., Leonard Refrigerator Co., Norge Corp., Servel, Inc. (export only), Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg. Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co. Member companies not reporting included: Jomoco, Inc., Merchant & Evans Co., and Sparks-Withington Co.

The sales of the reporting companies do, however, include units manufactured for the following concerns: Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., and Sears, Roebuck & Co.

	Domestic		Canadian		Other Foreign		Total World	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1. Chest	735	\$ 34,092			197	\$ 10,152		
2. Less than 3 cu. ft.	21	1,268						
3. 3 to 3.99 cu. ft.	3,745	229,934	150	9,192	3,752	230,146		
4. 4 to 4.99 cu. ft.	26,960	1,739,754	1,541	103,117	8,043	536,671		
5. 5 to 5.99 cu. ft.	80,240	6,347,673	1,681	138,911	3,512	287,202		
6. 6 to 6.99 cu. ft.	119,425	10,311,612	905	84,084	2,156	189,979		
7. 7 to 7.99 cu. ft.	39,645	4,095,802	187	19,471	771	84,337		
8. 8 to 8.99 cu. ft.	11,900	1,280,232	29	2,961	344	41,359		
9. 9 to 9.99 cu. ft.	350	44,310						
10. 10 to 10.99 cu. ft.								
11. Total Lacquer	282,021	24,144,614	4,493	357,736	18,775	1,389,846		
12. Porcelain (Exterior) Cabinets Complete	408	31,591	39	3,111	43	3,403		
13. Up to 4.99 cu. ft.	7,828	701,563	167	15,393	336	30,693		
14. 5 to 5.99 cu. ft.	21,005	2,091,877	95	9,816	262	27,267		
15. 6 to 6.99 cu. ft.	6,975	779,989	24	2,735	187	21,349		
16. 7 to 7.99 cu. ft.	4,381	537,683	9	1,092	191	24,483		
17. 8 to 8.99 cu. ft.	446	54,648	4	787	17	2,686		
18. 9 to 9.99 cu. ft.	1,264	247,031	4	887	96	19,351		
19. Total Porcelain	42,307	4,474,322	342	33,821	1,332	129,332		
20. Total—Lines 11 and 19.....	325,328	28,618,936	4,835	391,557	19,907	1,519,078		
21. Separate Systems	507*	32,851*	161	5,353	544	26,657		
22. Separate Household								
23. Evaporators	3,101	21,988	22	328	166	10,990		
24. Total—Lines 20, 21, 22.....	327,922		5,018		20,617			
25. Condensing Units	813	51,822	22	1,379	576	35,181		
26. Cabinets—No Systems.....	490	28,628			170	8,164		
27. Total Household.....		\$28,688,583		\$398,617		\$1,600,070		

\*Includes sales and credits reported by more than one company.

Associated Gas & Electric System Starts Spring  
Campaign with Goal of 63,150 Sales

NEW YORK CITY—With the sale of 60,000 electric and 3,150 gas refrigerators as a goal, the 1937 Refrigeration Jubilee, spring selling activity of the Associated Gas & Electric System and its properties, will swing into action May 10.

Based on the estimate that one-half of the town families on company and property power lines have already been sold refrigerators, the theme of the 51-day selling event is "Find That Other Half."

The "other half" groups at which the sales drive is being aimed include families in the lower and medium income brackets, builders of new homes, and newly-wed families. For the duration of the contest period the salesmen of System companies and properties will be considered as "detectives."

Highlighting the group of given "clues" which companies will use in tracking down sales, are meter-selling and special payments plans in which the following terms are offered: \$2 down and 48 months to pay on lacquer finish refrigerators of less than 5 cu. ft. capacities, and \$2 down and 36 months to pay on boxes exceeding 5 cu. ft. capacities.

Attainment of the 63,150 unit quota set for the drive will mean surpassing the high sales record achieved during the 1936 Jubilee campaign, when a total of 59,339 units were sold by properties and dealers.

To stimulate a competitive spirit among company salesmen during the campaign, weekly awards of \$5 will be paid to the salesman in each of the System's four groups who has the highest number of installations to his credit. Prizes of \$25, \$15, and \$10 will be awarded to the three salesmen in each group who sell the most units during the drive.

In addition to these major prizes, member companies will also offer special inducements to their own salesmen and will urge them to work for membership in one of the manufacturers' national honorary sales organizations.

Other leading "clues" spotted on the Jubilee program to aid participating companies in sleuthing down sales include securing dealer cooperation, using domestic market surveys, enlisting the participation of company employees, running local advertising, and tying in with manufacturers' national advertising and with kitchen modernization programs.

New York's 31,933  
Leads States in  
March Sales

States and Territories	Quantity Household Low Sides
Alabama.....	3,399
Arizona.....	1,109
Arkansas.....	2,291
California.....	24,503
Colorado.....	2,183
Connecticut.....	7,227
Delaware.....	663
District of Columbia.....	2,232
Florida.....	2,381
Georgia.....	4,800
Idaho.....	1,430
Illinois.....	24,766
Indiana.....	9,939
Iowa.....	5,395
Kansas.....	4,126
Kentucky.....	4,144
Louisiana.....	2,508
Maine.....	1,118
Maryland.....	4,090
Massachusetts.....	16,801
Michigan.....	16,313
Minnesota.....	6,878
Mississippi.....	1,327
Missouri.....	11,872
Montana.....	1,588
Nebraska.....	2,757
Nevada.....	368
New Hampshire.....	956
New Jersey.....	13,759
New Mexico.....	605
New York.....	31,933
North Carolina.....	5,454
North Dakota.....	503
Ohio.....	25,379
Oklahoma.....	3,695
Oregon.....	3,340
Pennsylvania.....	26,870
Rhode Island.....	1,723
South Carolina.....	2,885
South Dakota.....	1,036
Tennessee.....	5,057
Texas.....	13,069
Utah.....	2,313
Vermont.....	863
Virginia.....	4,343
Washington.....	6,201
West Virginia.....	3,827
Wisconsin.....	7,280
Wyoming.....	623
Total United States.....	327,922
Canada.....	5,018
Other Foreign (Including U. S. Possessions).....	20,617
Total For World.....	353,557

## Earnings

## Revere Copper &amp; Brass

NEW YORK CITY—Net profits of Revere Copper & Brass, Inc., and wholly-owned subsidiaries for the first quarter of 1937 were more than six times as great as those for the same period of 1936. Net incomes for 1936 and 1937, respectively, were \$234,769 and \$1,414,712.

## Stewart-Warner

CHICAGO—Earnings nearly double those for the corresponding period of 1936 and the best since 1929 were reported by Stewart-Warner Corp. and subsidiaries for the first quarter of 1937.

Net profits totaled \$841,256, or 68 cents per share on outstanding stock, for 1937, as compared with \$432,327, or 35 cents per share, for last year.

Refrigerator and radio sales for the period were the best in the history of the company, according to J. E. Otis, Jr. president. Refrigerator sales showed a gain of 58% over the first quarter of 1936.

## THE BUYER'S GUIDE

## 4-STAR CASE &amp; COOLER FRANCHISE

SHERER

- ★ A COMPLETE LINE of CASES and COOLERS, engineered to a high peak of perfection.
- ★ LAYOUT DEPARTMENT—layouts for food store modernization programs without cost or obligation.
- ★ NEW EQUIPMENT constantly under test and development. New developments open new fields for compressor sales.
- ★ ADVERTISING—Sherer Cases and Coolers regularly advertised by direct mail and in leading food trade publications.

Addition of the Sherer Case and Cooler Franchise to your present line is your move for '37. Desirable territories still available. Write for catalog and franchise details. Be sure to tell us which territory interests you.



Exclusive Case and Cooler Mfg. ... Serving Food Retailers Since 1852

TYLER'S  
WELDED STEEL Cases

1937 line offers wide variety and sensational values. 6 big new features and iron-clad guarantee. Only Tyler gives one-piece "welded steel" construction, 100% insulation. Wonderful sales opportunity. Most talked of and fastest selling line on market. WRITE today.

TYLER Sales-Fixture Company  
Dept. E, NILES, MICHIGAN

## SIX BIG NEW FEATURES

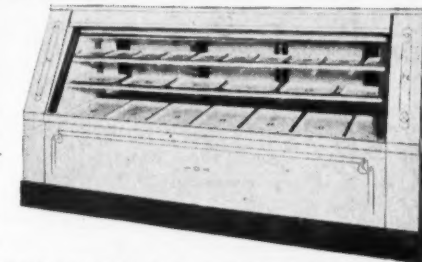


## CAPACITY!—You Get It Here!

When you buy a refrigerator, you're interested largely in CAPACITY—and there's no cabinet today which offers so much storage space for so little cost as the Model No. 350. THIRTY CUBIC FEET OF STORAGE—enough room for 14 cases of beverage—and yet, the No. 350 Refrigerator occupies but 9 sq. ft. of floor space. The No. 350 Refrigerator comes with solid or glass display type doors in top section; your choice, too, of wearing DuLux, or gleaming white Porcelain, chrome trimmed. Write for Folder 350, with complete details.

GLOEKLER MANUFACTURING COMPANY  
ERIE, PENNSYLVANIA  
SALES OFFICE: 40 NORTH AVENUE, PITTSBURGH

## NATIONAL DOUBLE DUTY CASES



You will sell more double duty cases if you sell the NATIONAL CASES. Every purchaser of a NATIONAL CASE will recommend you another customer because of his satisfaction. NATIONAL CASES are built better, will serve longer, cost less to operate on account of heavy construction, cork insulation. Buy and Sell the best case. NATIONAL discounts allow you larger profits. For literature, prices and discounts write

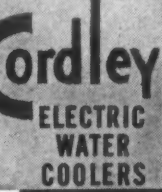
NATIONAL REFRIGERATOR CO., Philadelphia, Pa.

TYLER'S WELDED  
STEEL  
REACH-IN BOX

## SALES SENSATION OF 1937

Big waiting market for food stores, restaurants, bakeries, tap rooms. New principle "Stratosphere" cooling. Maximum efficiency and capacity in small floor space. Dealers report tremendous demand. Big sales opportunity. Write today.

TYLER Sales-Fixture Company  
DEPT. EX, NILES, MICHIGAN

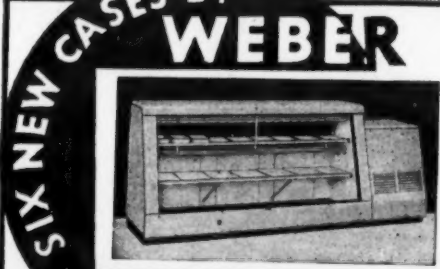


THERE'S a large and profitable market for water coolers ready and waiting. The Cordley line is ideal for reaching that market... the cabinets simple in design, attractive and compact... the cooling mechanism efficient, dependable and trouble-free. Best of all, Cordley coolers are easy to sell... for they are inexpensive in first cost and easy on the electric bill. Generous margin of profit to dealers. Ask us for full information. Cordley & Hayes, 141 Hudson St., N.Y.

A complete line of both pressure and bottle types

WATER COOLERS SINCE 1889

## SIX NEW CASES BY WEBER New Steps to PROFIT



The most complete line of Refrigeration Equipment—New Streamlined Beauty—Unchallenged quality. Exclusive Territories Now Available—Complete Financing Plan.

Established 1902—  
Cable Address: "WEBERCO"

Weber Showcase & Fixture Company, Inc.  
5700 Avalon Boulevard  
Los Angeles, California